Sincerely Yours
Charles Rice.

[From an autographed photograph presented the author with a complimentary copy of the 1890 Pharmacopœia. Heretofore unpublished.]

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J. U. & C. G. LLOYD
CINCINNATI, OHIO

PHARMACY SERIES, No. 4.

HISTORY
OF THE
VEGETABLE DRUGS
OF THE
Pharmacopeia of the United States

By JOHN URI LLOYD, Phar. M.,

With portraits of Charles Rice, Ph. D., New York, N. Y., elected Chairman of the Pharmacopeial Committee on Revision, who died May 13, 1901 (see portrait), and Joseph P. Remington, Ph. M., Philadelphia, Pa. (see portrait), Rice's successor as Chairman of the Revision Committee, under whom the work appeared.

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INTRODUCTION.

Together with his brother, Mr. C. G. Lloyd, the writer began, in 1884, a quarterly publication entitled *Drugs and Medicines of North America,* with the object of considering, consecutively, the American remedial agents then in use by members of the various professions of medicine in America. It was planned to give the historical record of every American medicinal plant, as well as its pharmaceutical preparations, whether Pharmacopeial or otherwise. The literature on the subject being largely Americana, the authors believed that they were in a position to do passable justice to the subject, inasmuch as they had, for a number of years, given much study in that direction.

This publication was kindly received by the medical and pharmaceutical professions of America, as well as by scientists throughout the world. However, notwithstanding the cordial reception of the work, its authors became convinced that, before going further in this direction, much reference literature not then at their command should be provided. Owing to this fact, and to the increasing cares of business, and notwithstanding the additions that were continually being made to their libraries, the publication was reluctantly suspended with Number 5 of Volume II, which appeared in June, 1887.

With the hope of again resuming the work thus temporarily (as it was hoped) laid aside, even more persistent efforts were made to collect books, pamphlets, essays, travelers' narratives, and other literature concerning the American materia medica, as well as foreign publications, botanical and otherwise, connected with the discovery, introduction, or uses of medicinal plants generally. But now, when the literature on the subject is at last passably satisfactory, the authors comprehend that it is too late for them to hope to resume, much less complete, a work after the nature and plan of *Drugs and Medicines of North America.*

This definite abandonment of a plan long so ardently cherished, is due, not to the cooling of enthusiasm, but to the multiplicity of duties in other directions, linked with the enervating touch of this writer's more than threescore years. It is earnestly hoped, however, that the connected data brought together in the Lloyd Library through so many years of earnest effort on the part of its founders, and now donated to the world of science, may some day be happily utilized in the resumption of this work by persons younger and less burdened by cares.

Disappointment not Altogether Fruitless.—However, the efforts of the authors of *Drugs and Medicines of North America* were not altogether fruitless. The publication led to many delightful correspondences with men concerned in like directions, both at home and abroad. Among these may be named the renowned Professor Friedrich A. Flückiger, (of Strassburg University) Germany, then, perhaps,

the foremost pharmacologist of the world. With Daniel Hanbury, he had just completed the monumental work on European and Oriental drugs, (including the principal drugs of other parts of the world) known as the *Pharmacographia,* and was ambitious to continue, in like manner, with the medicinal products of North America. In July, 1894, Professor Flückiger visited America, where he was the guest of the renowned American pharmacists, Dr. Edward R. Squibb, of Brooklyn, and Dr. Frederick Hoffman, of New York City. He had arranged to visit Cincinnati and consummate here a plan for the detailed study of the North American pharmacography, but a period of intense heat then chanced to prevail throughout America, and the aged professor was forced, reluctantly, to abandon his journey to this city. The writer then selected and forwarded to Professor Flückiger, for review, several cases of books dealing with the early American materia medica, such as domestic writings, early American travels, Eclectic and Thomsonian literature, as well as publications of primitive days concerning family medicines and connected preparations. These very much delighted and even surprised Professor Flückiger, both as regards variety and contents. It was then tentatively arranged that a *Pharmacography of North American Medicinal Plants and Drugs* should be at once inaugurated, the responsibility of the chemistry and the correlation of the chemical and proximate products derived from the American materia medica being assumed by Professor Flückiger, as well as the systematic research of foreign publications in those directions. He designed, also, to institute a series of original investigations in his laboratory, at Strassburg University. The Lloyd Library seemed, even then, competent to furnish the historical data sufficient to establish the records of the plants considered, this writer (John Uri Lloyd) accepting the responsibility of the history, including the sophistications and descriptions of the parts used in medicine, whilst the botanical history, relationships, and kindred descriptions were to be the care of Mr. Curtis Gates Lloyd. The publication was thus to partake of the plan of both *Drugs and Medicines of North America,* and the *Pharmacographia* of Flückiger and Hanbury, so well known and so thoroughly established. The work was accordingly commenced, and several historical articles were prepared by the writer, a few of which were forwarded to Professor Flückiger. The unfortunate and lamentable death of that world-renowned pharmacologist, within a very short time after his return to Europe, terminated the enterprise, bringing to the writer one of the greatest disappointments of his life.

Of the drug articles thus prepared for Professor Flückiger, two were subsequently published in the *American Journal of Pharmacy,* one, titled *The California Manna,** appearing in July, 1897, and the

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* When Prof. Flückiger visited America (July, 1894), he hoped to obtain historical data that would enable him to give the records of several interesting American productions. In this he failed, and he then associated in his behalf the services of the author of this paper. After much of the work had been done, the death of Prof. Flückiger interrupted the investigation.

These papers (some of them) passed into possession of Prof. Ed.

other, *The Destruction of Tobacco in America,*† in November, 1897.

Discouragement Leads to Renewed Effort.—Notwithstanding the bitter disappointment in connection with the death of Professor Flückiger, the effort to complete the record of American drugs continued. To this end every sacrifice was made in the way of time, as well as of money investment, in the earnest hope that younger men, more favorably situated, educationally and otherwise, might ultimately take up the work begun by the founders of the Lloyd Library in *Drugs and Medicines of North America,* their publication of twenty-five years ago. While in their own direction the accomplishment of this object seems no longer possible of attainment, comes a no less hopeful and enthusiastic delight in contemplating what others will yet enjoy in a future day, when the Lloyd Library will be a contributing factor to another's opportunity.

May not the writer, then, be pardoned for repeating that this struggle of the past has not been altogether fruitless, inasmuch as the additions to the Lloyd Library have been earnestly studied as they were collected, thus affording a recreative effort and a stimulus that of necessity enriches knowledge, broadens views, and enlarges opportunities?

Credit Be to Whom Credit is Due.—The foregoing, partially explanatory remarks, touching briefly upon the historical features of the abandoned work to which allusion has so frequently been made, will introduce the text of this Bulletin of the Lloyd Library. The history of such vegetable drugs as are included herein embraces every Pharmacopeial vegetable representative of the Pharmacopeia of the United States, Eighth Decennial Revision, 1900. In preparing this work, the writer has been continually impressed with the fact that the comforts and the triumphs of man, in the present, are made possible by the struggles and the sacrifices of men of the past. It is evident, furthermore, that if past events indicate the future's trend, other links, yet to be added to the lengthening chain, will leave whosoever is now conspicuous in this moment of the passing along an empirical pioneer, as contrasted with the man who stands in the sunshine of the sciences of the future.

In this connection it may be recalled that, at the meeting of the American Pharmaceutical Association in Los Angeles, 1909, this writer contributed a paper put together on the spur of the moment, titled

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Schaer, of Strassburg University, who translated into German the accompanying work by Professor Lloyd on American Manna, for the pages of the *Berichte der Deutschen Pharmaceutischen Gesellschaft.*

We present herein, with the knowledge and consent of Prof. Schaer and the author, the original paper on American Manna.—*Editor Am. Jour. Pharm.*

† When Prof. Flückiger visited America (July, 1894), he hoped to obtain historical data that would enable him to give the records of several interesting American productions. In this he failed, and he then associated in his behalf the services of the author of this paper. After much of the work had been done, the death of Professor Flückiger interrupted the investigation. This paper on Tobacco was one of the subjects considered.—*Editor Am. Jour. Pharm.*

INTRODUCTION.

A Plea for Empiricism, in which were embodied pleadings for justice in behalf of men no longer upon earth, but whose painstaking work has been far-reaching in its effects. The views then expressed are yet entertained by the writer, and with no less earnestness.

The record of American as well as of foreign drugs establishes that to the so-called empiricists of the past must be credited the discovery and introduction of practically one and all the remedial vegetable agents now in use. To these individuals the professions of medicine and pharmacy are no less indebted than are the people in other walks of life. These facts also permitted the inference (before mentioned) that from the same class, the empiricists, will come other vegetable remedial agents, destined to serve the needs of suffering humanity.

This writer, to-day, believes with heartfelt earnestness, that even the unlettered aborigines of all lands whose products serve civilization, are entitled to civilization's lasting obligations. The story is a common one. Necessity of environment, or accident, led primitive man into a search of nature's secrets. Observant pioneers, or adventurers, applied the discoveries of the aborigines to their own domestic uses. The man of commerce served next his part in the distribution of such drugs and foods, and finally systematic, professional students further elaborated these products that, but for the empiricist of the past, preceded by the aborigines in the time beyond, might not otherwise be known.

The Pharmacopeial Vegetable Materia Medica.—As before stated, the pages that follow carry the titles of every vegetable drug of the *Pharmacopeia of the United States,* 1900 Revision. Of necessity, only enough is chronicled of each drug's beginning to point to the peoples or the individuals who introduced them to medicine and pharmacy, no attempt being made to follow the details of subsequent manipulation. Brevity in the record is a necessity. References to the Bibliography appended to the work, indicate that an attempt at more than fairly detailed historical credit would have been impracticable, the aim being merely to establish the general introduction of each drug. Nor is the first link in the chain often seen. The beginning of the use of most vegetable remedial agents antedates written history. As a rule, the earliest authorities cited herein base their statements upon those of others, the details being now lost in antiquity, or veiled by tradition. Many worthy compilers, historians, travelers, explorers, and authors, whose part in the passing along will sometime be duly credited, have unquestionably been overlooked, and hence unintentionally neglected. In this connection, a review of the Bibliography of this Bulletin indicates the number of publications cited that, seemingly far from medicine, point to others that are of historic value.

Concerning the Bibliography.—The writer has freely accepted, especially as regards Old World and Oriental products, the statements and references of authorities in whom he has full confidence, deeming it unnecessary to verify bibliographical statements, even though the original documents were conveniently at hand, unless there were a par-

ticular reason for so doing. For example, Flückiger and Hanbury's *Pharmacographia,* and similar works, are accepted as unimpeachable in their reference facts.

The titles only of authoritative works to which reference might have been made would comprise a volume. The list has therefore necessarily been restricted to such as are most important. Whoever wishes to elaborate any subject herein mentioned, will probably find the list suggestively ample, for each, as a rule, carries references to others connected therewith. It will be observed that travelers and explorers, as well as historians, often first refer to medicines used in the countries described by them. In this direction it will be seen that the Lloyd Library is particularly fortunate, as concerns its completeness, there being at this date 32,434 volumes on its shelves, exclusive of pamphlets.

The writer wishes, in conclusion, to thank, especially, the Librarian of the Lloyd Library, Captain William Holden, to whose painstaking care, both in the way of procuring volumes needed and of seeking references as required, as well as of compiling the Bibliography, he is much indebted.

To the Assistant Librarian, Miss Edith Wycoff, who has, in this as in other directions been exceedingly helpful, the writer expresses his sincerest thanks.

To the writer's secretary, Miss Margaret Stewart, M. A., are to be credited the translations from Greek and Latin authors, as well as continued helpful care throughout the entire work.

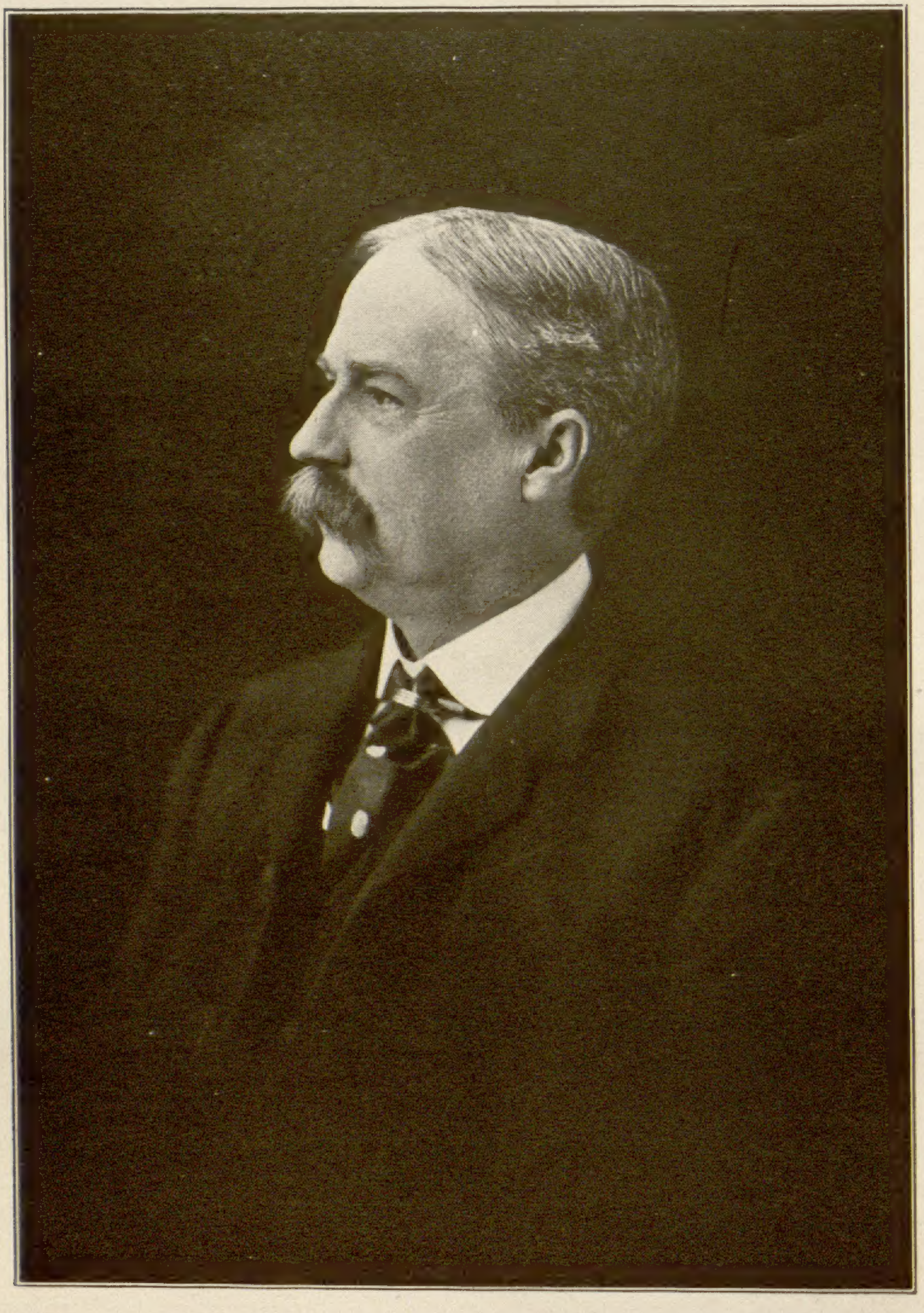
Several of the articles herein included (as those on Aloes and Pomegranate) are condensations of papers previously published by the writer in the *Western Druggist,* Chicago. To Dr. Sigmund Waldbott, then in charge of the Lloyd Library, who was of exceptional service in the production of these papers, the writer feels no less indebted now than at the time of their original publication.

For the inspiration of the American Pharmaceutical Association, the author is very grateful. A synopsis of the work was prepared for the society at its Richmond (1910) meeting, but owing to illness of the undersigned was not presented.

This Bulletin on Pharmacopeial drugs expresses so imperfectly the amount of labor that has been expended in its evolution, as to lead the author to admit frankly a degree of humiliation because of the paucity of returns for so great an outlay of time, study, and library research.

Cincinnati, May 19, 1911.

JOHN URI LLOYD.



with kind regards
Joseph P. Remington

[From an autographed photograph presented the author with a complimentary copy of the 1900 Pharmacopœia.]

Pharmacopœial Vegetable Drugs.

ACACIA

Acacia has been an article of commerce since the most remote records of historical antiquity. Representations of the Acacia tree, together with heaps of gum, were pictured in the reign of Ramses III of Egypt. Acacia was exported from the Gulf of Aden, seventeen hundred years before Christ. Mention of the gum is of frequent occurrence in Egyptian inscriptions, where it is referred to as the Gum of Canaan. Theophrastus (633), in the third and fourth centuries before Christ, described it, as also did Dioscorides (194) and Pliny (514), under the name "Egyptian Gum." It has been employed in the arts from all time and in domestic medicine and commerce, as well as by the Arabian physicians and those of the renowned school of Salerno. During the Middle Ages it was obtained from Egypt and Turkey, being an article of commerce in the bazaars of Constantinople, A. D. 1340. The drug was distributed through Europe from Venice, as early as A. D. 1521. Among the most interesting and instructive recent contributions to the subject are the reports of the Wellcome Research Laboratory, Kartoum (678), 1904.

ACONITUM

Aconite, **Aconitum napellus,** was familiar to the ancients as a poisonous plant, and was used by the ancient Chinese as well as by the hill tribes of India. In a work published for the Welsh MSS. Society, 1861, entitled "The Physicians of Myddvai," (507), aconite was designated as a plant that every physician should grow.* In 1763, Störk (617), of Vienna, introduced the drug to medical practice, from which date it crept into the practice of the dominant school. Aconite has ever been a Homeopathic favorite.

ALOE

(ALOE SUCCOTRINA.)

The genus aloe comprises a large family of succulent-leaved plants native to tropical countries. Most of the species have showy

*Physicians of Myddvai. The domestic physician of Rhys Gryg, prince of South Wales, who died 1233, made a collection of recipes used in medicine at that date in his country. He was assisted by his three sons, the collection being a valuable historical record concerning remedial agents and methods of that date. Of these, two compilations have been issued, the two appearing together, 1861, with a translation by John Pughe (470 pp). The original manuscript is in the British Museum. [See page 761 Pharmacographia.]

flowers and many are cultivated in hot-houses. Aloe succotrina "grows in the Indies, and especially in the Island of Soccotera" (Lam.), but has long been cultivated in England. It is a shrub five or six feet high, with a stem marked with the scars of the fallen leaves. The stem is at first simple, but when the plant is old the stem is usually divided. At the top of each branch is borne a large cluster of thick, crowded, fleshy leaves. Each leaf is one and one-half to two feet long, rounded beneath, flattened on the upper side, the margins being each a row of white spines. The flowers are in a large terminal spike-like raceme, proceeding from the center of the leaf cluster. The flowers are orange-red, nodding, cylindrical, each borne on a short peduncle, slightly exserted. The pistil has a three-celled, many seeded ovary and a long simple style.

The earliest history of the aloe plant is somewhat obscured by the fact that the name aloe, for example as it occurs in the Bible, relates to a substance entirely different from the inspissated juice of the various species of the modern aloe plant. The aloe of the Bible is the wood of *aquilaria agallocha* (Roxburgh) or *lignaloes*, which was used among the ancient nations as an incense, and was held in high esteem on account of its scarcity. With modern cathartic aloes it has nothing in common except the bitterness.

The aloe plant is considered by modern writers to have grown wild in India from a very remote period. It was most likely introduced into that country by the Arabs, who probably were the distributors of knowledge concerning the medicinal virtues of aloes. This drug was employed by Galen (254a), and later described by the Greek and Roman writers of the first century, chief among whom are Dioscorides (194) and Pliny (514), whose descriptions of aloes and its uses, however, bear much resemblance to each other.

Socotrine aloes appears to have acquired its reputation at an early date. Clusius (153) in 1593 reports that Mesue, the Arabian pharmaceutical writer, "the father of pharmacopeias," (who died about A. D. 1028), knew of the Socotrine origin of aloes, mentioning Persia, Armenia, and Arabia likewise as sources of aloes of commerce. Ibn Baitar (1197-1248) (214) speaks of aloes from the island of Socotra as being superior to that of the Arabian district of Yemen.

The name aloe socotrina was undoubtedly derived from the island of Socotra off the entrance to the Red Sea. Yet, some authors maintain that this appellation was by some given to the inspissated juice of aloe *(succus citrinus)* on account of the lemon-yellow color of its powder.* Not all of the earlier medico-pharmaceutical writers who afterwards considered the drug refer to Socotrine or any other special kind of aloes. Hieronymus Bock (1556) (82) merely alludes to the drug being brought from India and Arabia, a statement already found in Dioscorides. He relates an instance where the aloe plant is cultivated in Germany under the name *sempervivum* as an indoor ornamental plant.

*Usage accepts that *Aloe Succotrina* is the plant described by Lamarck, and that *Aloe Socotrina* is the commercial extract derived from certain species of aloes. Exceptions in the spelling of the latter word have occurred in older pharmacopeias.

Samuel Purchas (1625) (527), however, in his important collection of travels, gives prominence to Socotrine aloes, and places on record the commercial transactions of British merchants with the king of Socotra. One of his contributors (William Finch, merchant) gives the following interesting information which he gathered about A. D. 1607, concerning the occurrence and preparation of aloes in the island of Socotra:

"I could learne of no merchandise the iland yeeldeth, but Aloes, Sanguis Draconis, and Dates and, as they say on the shore of Aba del Curia, Blacke Ambergreese. Of Aloes I suppose they could make yearly more then Christendome can spend, the herbe growing in great abundance, being no other than *Semper vivum*, in all things agreeing to that description of Dioscorides in seed, stalke, etc. It is yet all of a red pricklie sort, and much chamfered* in the leaves, so full of a rosin-iuyce that it is ready to breake with it. The chiefe time to make it, is when the winds blowe northerly, that is, about September, and that after the fall of some raine, which being then gathered, they cut in small pieces, and cast into a pit made in the ground, well cleansed from filth and paved: there it lieth to ferment in the heat of the sunne, whereby it floweth forth. Thence they take and put it in skinnes, which they hang up in the wind to dry, where it becommeth hard. They sold us for 20 Rials a Quintall which is 103 pounds English, but we were after told that they sold to others for 12, which considering the abundance and easie making, may be credible." Elsewhere the statement is made that "the Aloe of Socotra exceedeth in goodnesse that which is gathered in Hadhramut of the land of Jaman, Arabia, or anywhere else." 1800 lbs. of Socotrine aloes were bought at one time and 2,722 lbs. at another.

The ancient trade of the island has never increased, and in 1833, we are informed, only two tons were exported, while at present the manufacture and export seem to have ceased altogether. No doubt this results from unfavorable local conditions as well as the intrusive competition of other countries. In the sixteenth century or perhaps before, the aloe plant was introduced into the West Indies and was especially dwelt on by Ligon (1763) (383) as having occurred in Barbadoes as early as 1647-1650, which is only about twenty years after the English came into possession of this island (365). It soon became an article of export, appearing in the London market in 1693 (239). In this connection, however, it is strange that J. B. Labat, a French monk and careful student of nature, having visited the island of Barbadoes in 1700, fails to mention Barbadoes aloes among the staples (365). He says on this point: "Formerly much tobacco was planted, and subsequently ginger and indigo; cotton is now grown up in some parts of the island, but sugar is at present the only article to which attention is devoted." That his omission could not be from ignorance is shown by his careful reference to aloes when twenty-eight years afterwards (1728) he refreshingly describes the resources and the people of Senegambia on the west coast of Africa (365), and strongly advocates the use of aloes that may be made from aloe plants grown in

*Grooved.

abundance in that district, in the place of aloes from the island of Socotra which, in his opinion, possessed an imaginary superiority only "because it comes from afar and costs much." The three commercial forms of the drug then known, Socotrine, hepatic, and caballine aloes. Labat ascribes to one and the same origin, the differences resulting only from the mode of preparation, caballine "or horse aloes, the lowest grade, being made from refuse material."

Yet, Barbadoes aloes is not herein referred to. Whether this neglect is due to interruption of cultivation or to some other cause difficult to determine may never be settled. It is established, however, that Barbadoes aloes was exported from the island both before and soon after these reports. Samuel Dale, in 1751, expressly states (179) that aloes is brought to England from the island of Barbadoes in large gourds and that the inspissated juice has the properties of aloe succotrina.

From Cape Colony, Africa, where it was made at that date by Peter Van Wett (239), aloes has been an article of export since 1773.

Curacao aloes was known in the Dutch market in 1847, and appeared in the English market for the first time as late as about 1876.

ALTHAEA

This drug **(Althæa officinalis,)** known as Marshmallow, was described by Dioscorides (194) under the Greek name signifying *to heal.* It has been used in domestic medicine from the earliest periods. Charlemagne (A. D. 724-814), over a thousand years ago, demanded that it be cultivated in his domain. It grows throughout Europe, Asia Minor, western and northern Asia and adjacent districts, being employed more or less in domestic medication in all localities. Its domestic use introduced this demulcent drug to early "professional" medication.

AMYGDALA AMARA

The seeds of Bitter Almonds **(Prunus amygdalus,** var. **amara),** known to be poisonous in the days of antiquity, were yet used medicinally throughout the Middle Ages. Valerius Cordus (169) employed them as an ingredient of trochisci. They are referred to by Scribonius Largus (589) in the century preceding Christ. Their poisonous qualities were shown to depend on hydrocyanic acid by Bohm of Berlin at the beginning of the last century. Bitter almonds have never been a favorite in domestic medicine, although as stated, used in that direction. They have been scarcely more a favorite in licensed medication.

AMYGDALA DULCIS

The Almond, **Prunus amygdalus,** var. **dulcis,** is one of the trees mentioned in the Old Testament. In the Book of Genesis the patriarch Israel commands his sons to carry the fruit, as a production of Palestine, as a present to Egypt. Theophrastus (633) makes copious ref-

erences to the Almond, and its name threads the stories of the Arabian Nights (25 and 88). It was mentioned with groceries and spices a thousand years ago, in a charter granted the monastery of Corbie, in Normandy, by Chilperic II, king of France (A. D. 539-584). Charlemagne, A. D. 812, wisely ordered the Almond tree introduced on the imperial farms. Almonds became an important item of Venetian trade in the fourteenth century. In 1411, the Knight Templars of Cyprus (Flückiger) taxed almonds, honey, and sesame seed. Mediæval cookery consumed almonds in enormous quantities, and as a nourishing food in the form of an emulsion the fruit crept into domestic medicine, and thence into professional use.

ANISUM

This drug, **Pimpinella anisum,** is among the oldest known medicines and spices. Theophrastus (633) and later writers, such as Dioscorides (194), Pliny (514), and Edrisi (221), mention it. Charlemagne commanded that it be cultivated on the imperial farms in Germany. Its ancient source was the island of Crete, and Egypt. It was one of the drugs enumerated by Edward I (1305), to be taxed when carried across the Bridge of London. Anise is mentioned in the expenses of King John of France (A. D. 1319-1364) during his abode in England. The Grocers' Company of London had its oversight (1453). The Royal Wardrobe of Edward IV (A. D. 1480) was perfumed thereby. It was used in England as a pot herb prior to 1542, and during the reign of Charlemagne it was enormously taxed. Throughout all this period anise was employed both as a spice and as a domestic medicine.

ANTHEMIS

Anthemis nobilis has been cultivated for centuries in English gardens and used in domestic medicine from the beginning of the records. It was introduced into Germany from Spain about the close of the Middle Ages. It now is grown in favorable localities throughout every section of Europe and especially in Saxony as well as Belgium and France. The name Roman Chamomile was given the drug growing near Rome, by Joachim Camerarius (120) 1598.

APOCYNUM

American "Indian Hemp," **Apocynum cannabinum,** is the name given to various species and varieties of this plant, in contradistinction to the true Indan hemp of India, *Cannabis indica.* The root of apocynum has been used in decoction as an active hydragogue cathartic, and also as a diuretic, in domestic medicine, since the days of the earliest settlers, who learned of its qualities from the Indians. Thus introduced into medication, it came to the attention of the profession. As a remedy in "dropsy" apocynum has been extensively used in home medication, and thus became known to physicians of American education. Finally it was introduced to the pages of the Pharmacopeia.

The Eclectic literature of America for nearly a hundred years has been prolific in the praises of this remedy. (Drug Treatise by Lloyd Brothers, now in process.)

ARNICA

All parts of this plant, **(Arnica montana,)** were popular remedies in Germany at a very early period. The early botanists, such as Matthiolus (414), Gesner (264), and Clusius (153) had a knowledge of its medicinal qualities, as used by the common people. Franz Joël (341), of Greifswald, Germany, expressly recommended it in the sixteenth century. During 1678-'79 arnica experienced an enthusiastic crusade as a "new remedy" in the cure of fevers, the hope being to supplant Peruvian bark by this domestic drug. Collin (162), of Vienna, reported a thousand patients in the Pazman Hospital cured of intermittents by the flowers, whilst other physicians were scarcely less enthusiastic. The herb was thus recognized in the London Pharmacopeia (1788) but fell into disuse, regaining in later years a position as an application in the form of a tincture for bruises, sprains, etc., in this direction being now commended in modern medical and domestic literature.

ASAFŒTIDA

Under the name *"Laser,"* a substance supposed to have been asafœtida, **(Ferula fœtida)**, has from all time been used in India and Persia, and thence long exported, a duty being levied thereon at the Roman Custom House of Alexandria. Under the name *Hingu* it is mentioned in Sanscrit works, as well as in Susruta (622). Arabian and Persian travelers of the Middle Ages knew it. Ali Istakhri (337), of ancient Persepolis, in the tenth century, states that it was abundantly produced between Sistan and Makran of Beluchistan, and was used by the people as a condiment. It has ever been employed in Arabic therapy. Matthæus Platearius (513), nearly a thousand years ago, mentioned it in his work on simple medicines, *"Circa instans."* Otho of Cremona, near that period, states that the more fetid the drug, the better its qualities. The "Physicians of Myddvai" (507)* valued it highly. Briefly, this drug drifted into European conspicuity from the Orient, where it had been empirically used from the remotest antiquity.

ASPIDIUM

The root of Aspidium, **Dryopteris filix-mas,** was used by the ancients as a vermifuge. Theophrastus (633), Dioscorides (194), and Pliny (514) all describe it. It passed as a domestic remedy through the Middle Ages, was noticed, 1790, by Valerius Cordus (169), and had a place as a drug to be taxed in Germany, in the sixteenth century. Neglected then, it was subsequently revived as a chief constituent, combined with purgatives, in a secret remedy for tape-worm, one of the promoters being Daniel Mathieu, an apothecary of Berlin. His treat-

*(See Footnote to Aconitum.)

ment was so successful that Frederick the Great purchased the formula for an annuity of thirty pounds, conferring on its originator the dignity of "Aulic Councillor." Madame Nuffler, the widow of a surgeon at Murten, Switzerland, was paid 18,000 livres by Louis XIV for a tape-worm cure consisting chiefly of powdered fern root. J. Peschier 1825, a pharmacist of Geneva, introduced the ethereal extract, which was not, however, employed in England to any extent until the middle of the last century. Its empirical record introduced male fern to the orthodox medical profession.

AURANTII DULCIS ET AMARI CORTEX

Sweet and Bitter Orange. The orange, **(Citrus)**, was unknown to the ancient Greeks and Romans. The Arabs, (Gallesio, 255), are accepted as having introduced it into Europe, first through Africa, Arabia, and Syria, from its original home in Northern India. In that country a wild orange still grows, supposedly the parent of the cultivated fruit, be it sweet or bitter. The first specimen to find its way into Europe was the bitter orange, cultivated in Rome in A. D. 1200, the sweet orange not being introduced until the fifteenth century, when it was imported by the Portuguese. The first oranges brought into England, seven in number, were imported by a Spanish ship in 1290. An Arabian physician of the twelfth century, Avicenna (30), employed the juice of the bitter orange in medicine.

BALSAMUM PERUVIANUM

This drug, obtained from the **Toluifera pereiræ,** came to the attention of the earlier Spanish explorers in South America as a substance commonly employed by the natives as a remedy for wounds. It constituted a part of the tribute paid by the natives to the Indian chiefs of Cuscatlan, to whom it was presented in curiously ornamented earthen jars.* On its first importation into Europe it brought enormous prices, as much as $45 an ounce, and in Rome 100 ducats, or over $200 an ounce. Pope Pius V permitted the Bishop of the Indies to substitute this Balsam of Guatemala for that of Egypt in the preparation of the chrism used in the Catholic churches. Various early descriptions of travelers refer to it more or less enthusiastically, between the conquest of Guatemala (A. D. 1524), and 1628, at which date Hernandez (314) described the tree. From the domestic use of the drug it crept into German pharmacy in the beginning of the seventeenth century. In consequence of the fact that the exports of Guatemala came through the port of Lima, Peru, the misleading name of "Peruvian Balsam" was in the early days affixed to it, paralleling somewhat the record of Mocha coffee, which is not grown in Mocha or even thereabout, but was exported therefrom in the early days of Arabian coffee.

* This reminds us of the curious jars in which we observed Mastich sold on the island of Scio by the collectors. These jars, holding a few ounces of the purest and clearest tears, have been thus an article of local commerce since before the Moslem rule.

PHARMACOPŒIAL VEGETABLE DRUGS.

BALSAMUM TOLUTANUM

This South American and West Indian drug (obtained from **Toluifera balsamum**), was in use by the natives on the discovery of those countries, being to-day collected after the native manner, as is also Balsam of Peru. Monardes (447) in his treatise, 1574, on West Indian productions, describes the Indian method of incising the bark and affixing shells of black wax to receive the balsam, in a district near Cartagena called Tolu, from which it takes its name.* He adds that it was much esteemed by the Indians, and later by the Spaniards, who transported it to Spain. Clusius (153) received, 1581, a specimen from Morgan, an apothecary to Queen Elizabeth. The price list of the city of Frankfort, Germany, 1669, gives it a place, while in 1646 it was noticed in the records of the city of Basle. Notwithstanding that Monardes (447) figured a broken pod and leaflet, and Humboldt and Bonpland (331) saw the tree in New Granada (1799), it was reserved for Weir (1863), a plant collector to the Royal Horticultural Society, London, to obtain the first good specimens of the pods and leaves, Guerin, 1868, first obtaining the flowers. Thus a complete description of a drug known for centuries was finally authoritatively established. The introduction of Balsam of Tolu into medicine and pharmacy followed the track (as is true of all other natural drugs of the Pharmacopeia), of its empirical record.

BELLADONNAE RADIX ET FOLIA

The plant **Atropa belladonna** is native to Southern Europe, extending thence to the Crimea, Caucasia, and the northern parts of Asia Minor. About 1504 a book appeared in Paris titled the *Grand Herbier,* which carried the first authentic notice of belladonna, although the term "solatrum furiale,"" used by Saladinus of Ascoli (570), about 1450, is presumed to refer to it. Its effects, internally, were subjects of treatises by Amoreaux (20a), Paris, 1760; Daries (184), Leipsic, 1776; Münch (453), Gottingen, 1783 and 1785, and subsequently by all who wrote comprehensively on medicine. In toxicology, the German botanist, Leonard Fuchs, (251) figured the plant as *Solanum somniferum,* 1542, fully identifying its poisonous properties, and J. M. Faber, Augsburg, 1677 (231a), wrote on its poisonous action. But the people in the plant's habitat have always been aware that all parts, even to the berries, were poisonous. In the eye, so far as we can locate its record, the first study concerning its local effect is that of Himly (317a) of Paris, 1802, although country people in the habitat of belladonna, from all time, know that it possesses the power of dilating the pupil. In "regular medicine" belladonna has a more recent introduction, due to the commendation of the well-known pharmacist, Mr. Peter Squire (611), of London, who about 1860 commended it as the basis of a useful liniment, for the relief of neuralgic pains. The drug is now used chiefly in the making of the alkaloid atropine, and in the prepara-

*** This reminds one of the method, in Asia Minor, of collecting the juice of the Scammony plant in the half shell of the clam.**

tion of a belladonna plaster that is exceedingly popular, as well as having a professional reputation. Johnson and Johnson, New Brunswick, U. S. A., now use more than 150,000 pounds of belladonna yearly in the making of plasters.

BENZOINUM

Benzoinum (from **Styrax benzoin**), curiously enough escaped the attention of the Greeks and Romans, nor, so far as is known, did those energetic tradesmen of the tenth to the thirteenth centuries, the Arabians and Persians, carry it to China. Ibn Batuta (333a) 1325-49, mentions "Java frankincense," which under the Arabian name became corrupted into *Banjawi, Benjui, Benzui, Benzoë, Benzoin,* and finally even *Benjamin.* After a hundred years the sultan of Egypt, Melech Elmaydi, sent it to the doge of Venice among other presents, and in 1490 a second doge of Venice was presented with a larger amount by the same sultan of Egypt. Considered still a precious balsam, in 1476 Caterina Cornaro, queen of Cyprus, received from Egypt 15 pounds of "Benzui." Thence travelers in Siam and the Malabar Coast, Venetian tradesmen, and others, gave it due consideration, during and after which time it became regularly imported into Europe. Being submitted to dry distillation in rude paper cones over a pan, the condensed distillate, or flowers, under the name of *Flores Benzoës,* in the 17th century, gave origin to the now familiar Benzoic Acid. Thus from the empiricism of the past this grateful flavoring agent and preservative was introduced to the medicine and pharmacy of to-day.

BERBERIS

The berberis officially recorded in the Pharmacopeia of the United States, (**Berberis aquifolium,** or mahonia), was introduced to medicine by Dr. Bundy, an Eclectic physician of California, who brought it to the attention of physicians (467) through the manufacturing establishment of Parke, Davis and Company, of Detroit, Michigan. This variety had previously been used throughout the Western States as a domestic remedy in the direction commended by Dr. Bundy, and in many respects it paralleled the domestic and official uses of its near relatives in the Orient and elsewhere.

The Pharmacopeia of India recognizes three species of barberry under the common name berberis. These species of barberry have domestic records as tonics dating from the earliest times, being used in decoction or infusion in inflammatory discharges, as well as in applications for various forms of ophthalmic inflammation. The Arabian physicians employed this plant. Dioscorides (194), Pliny (514), Celsus (136), Galen (254a), and others recognized it. It was one of the Indian drugs on which the Alexandrians levied duty, A. D. 176-180. Among Greek antiquities are preserved small vases of barberry, showing its value in ancient times. A certain Heraclides of Tarentum is mentioned by Celsus as having a reputation for treating diseases of the eye, and among the vases of barberry above referred to, is one bearing the label of this person. In formulas for eye diseases given by Galen

(254a), barberry is authoritatively recognized. The natives of India use an extract made from various species growing in Northern India, this extract being sold in the bazaars under the name Rusot, and used not only in affections of the eye, but as a tonic and febrifuge. The qualities of both the official drug and its foreign relatives are similar and were introduced by the common people.

BUCHU

The Hottentots of the Cape of Good Hope used the leaves of the Buchu plant **(Barosma betulina)** as a domestic remedy, and from them the colonists of the Cape of Good Hope derived their information concerning it. Reece (540) and Company, London, 1821, first imported it and introduced it to pharmacy and to the medical profession, where, as well as in private formulæ and domestic practice, it has ever since enjoyed more or less notoriety. Perhaps no "patent" American medicine has ever enjoyed greater notoriety than, about 1860, did the decoction of the leaves under the term "Helmbold's Buchu," which, a weak alcoholic decoction, commanded one dollar for a six-ounce vial, and sold in car-load lots. During the crusade of this preparation the medical profession of America, probably inspired by the press comments, prescribed buchu very freely. It is still in demand and is still favored as a constituent of remedies recommended to the laity.

CALAMUS

The use of Calamus, **Acorus calamus,** in the domestic medication of India, is recorded from the very earliest times. It is sold commonly in the bazaars, and Ainslie (7) in his Materia Medica of Hindoostan, 1813, states that in consequence of its great value in the bowel complaints of children, a severe penalty was placed on the refusal of any druggist to open his door in the night to sell calamus, when demanded. The antiquity of its use is shown from the fact that it was one of the constituents of the ointment Moses was commanded to make for use in the Tabernacle, (Ex. xxx), while the prophet Ezekiel says of the commerce of Tyre, "Bright iron, cassia, and calamus were in thy market." Theophrastus (633) mentions calamus, and Celsus (136), nearly two thousand years ago, refers to it as a drug from India. In the sixteenth century Amatus Lusitanus (16a) reports it as imported into Venice, and in 1692 Rheede (547) figures it as an Indian plant under the name *Vacha*, the same name being still applied to it on the Malabar Coast. From its tropical home calamus has spread until it is now found in all temperate climates suitable for its growth, the market supply coming mainly from Southern Russia, through Germany. The therapeutic use of calamus in pharmacy and licensed medicine is, as with other like substances, a gift of empiricism founded in the far distant past.

CALENDULA

Marigold, **Calendula officinalis,** has been known, practically, from the beginning of documentary records in scientific or medicinal lines.

A native of Eastern Asia, it is found under various names, from Japan to India, from the Orient to North America, where European colonists carried it, according to Josselyn (345), before 1670. In early days of English mediæval medication it was employed in decoctions for fevers, and as a hot drink, to promote perspiration. The juice was also employed empirically for sore eyes, and as an application to warts. Its popular use, as heired from a time lost to history, led to its final utilization by the medical profession, and to its position in the mediæval herbals, as also in many pharmacopeias and treatises on European medicines and medication.

JATEORHIZA CALUMBA*

Persons familiar with our common yellow parilla, Menispermum canadense, have a good idea of the plant that yields the calumba root of commerce. Indeed, a casual observer would take an illustration of one for the other, so closely do they resemble each other in shape of leaf, stem, and general floral appearance. One author, Roxburgh (559) (Flora Ind., Vol. 3, p. 807) has placed the plant in the genus menispermum. The genus jateorhiza as now constituted consists of three species, all natives of tropical Africa. It belongs to the natural order menispermaceæ. The plant which produces the colombo root of commerce is a herbaceous vine climbing over trees in the forests of eastern tropical Africa in the territory of Mozambique and Quilimani. The leaves are alternate, petiolate, cordate, and palmately lobed. As previously stated, they look very much like the leaves of our common yellow parilla. The flowers are dioecious and borne in pendulous axillary panicles. The female flowers have six sepals, six petals, six abortive stamens, and three pistils. The male flowers have the same floral envelopes and six perfect stamens. The anthers, as in yellow parilla, are four-celled, a structure comparatively rare save in this natural order. The plants that produce the root of commerce vary much in the shape of the leaves and in the amount of hispidity in the stem, and were formerly considered as belonging to two species, Jateorhiza calumba and Jateorhiza palmata, but later botanists have united them under the former name.

Calumba (also columbo) root has long been in use under the name "kalumb" among the African tribes of Mozambique, who employed it as a remedy for dysentery and other diseases (Berry) (63). Undoubtedly the drug was brought by them to the immediate knowledge of the Portuguese when they obtained possession of that country in 1508. Through the influence of their traders, knowledge of the drug was slowly diffused among the Europeans during the sixteenth and seventeenth centuries.

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*Derived from the Greek words *iater,* physician, and *rhiza,* root, evidently in allusion to its healing virtues. Most German and a few English authorities (e. g. Flueckiger, the German pharmacopeia of 1890, the U. S. pharmacopeia of 1880, and others) spell the name "jateorrhiza," with the two r's, notwithstanding the fact that Miers, the author of the name spelled it with a single r. In this he is followed by most authorities (except the Germans), including the Index Kewensis, and the U. S. pharmacopeia of 1890. Marmé (Pharmacognosie, 1886), suggests that the name *jatrorhiza,* should be used instead of jateorhiza, and so also does Koehler (Medicinal-pflanzen, 140).

The first definite information regarding calumba root, however, dates from the year 1671, when Franciscus Redi, 1626-1697, (538), born at Arezzo and physician to the Duke of Toscana, describing it under the name *calumba,* made its medicinal virtues conspicuous.

In 1695 the celebrated Leeuwenhoek (376), in his work "Arcana Naturae," recorded some chemical experiments that he had made with this root, which he calls radix indica, rays columba. He also introduced illustrations of crystals observed in the study of this drug. Contemporaneously with this physicist, J. C. Semmedus (592) (probably in 1689 or shortiy before) mentions *calumba* in his writings as occurring among drugs originating from India. This author's work has become more prominent in a later edition (1722).

Valmont-Bomare (656c) in the 1764 edition of his dictionary describes "calumbe" as the root of an unknown tree brought to us from India. He adds that in Bengal this root is considered a specific in cases of colics, indigestion, and against the effects of "mort-du-chien," which is the old French name for colchicum.

Not, however, until in close succession the treatises on calumba root by Gaubius (257a), 1771, Cartheuser (129), 1773, and Percival (499), 1773, appeared, was there much general distribution of knowledge concerning this drug. In this connection it is perhaps of interest to note that in a previous translation (dated 1755) of Cartheuser's Materia Medica calumba root is not to be found.

Through Percival's recommendation especially the drug rapidly gained entrance into European materia medicas, and since about 1776 we find a record of it in many of the pharmacopœias of European countries. However, the geographical and botanical origin of calumba root as yet remained a mystery. The Portuguese, as already stated, having had a monopoly of the trade in this article, seemed to have been careful not to disclose the origin of the drug and made it a custom to carry it to India and then to export it to Europe from Indian instead of African ports. Hence, for a long time the general impression prevailed that the plant was a native of India and that the capital of Ceylon (Colombo) gave the drug its name.

From about 1770, however, the suspicion that calumba root was of African origin had been gaining ground. In this year Philibert Commerson, a French physician, collected a specimen of a certain plant which was growing in the garden of M. Poivre in the Isle de France, which Lamarck in 1797 named Menispermum palmatum, stating that this menispermum (of which he described the male plant only) perhaps yielded the root that is brought to us from India under the name of calombo or colombo root. He adds, however, that "it seems to be indigenous to India."

In 1805 a distinct advance was made in establishing its African origin. M. Fortin in this year brought the root of a male calumba plant from Mozambique to the city of Madras, where it was raised and cultivated by Dr. James Anderson. From this specimen Dr. Berry (63), in 1811, published a botanical description in the "Asiatic Researches," in which he also gives definite information regarding its origin and uses in its native country. The specimen was transported

later by him to the Calcutta bontanical gardens. De Condolle in 1818 named the plant Cocculus palmatus. However, the female plant was still unknown.

In 1825 Captain W. F. Owen brought a male and a female plant from Oibo, in East Africa, to Mauritius, where it was cultivated and observed by Bojer. From this source, at last, Sir W. J. Hooker (324) in 1830 was enabled to describe the whole plant, both male and female, under the name of Cocculus palmatus, Hooker.

The name of the genus jateorhiza was finally created in 1849 by Miers. (Hooker, Niger Flora, p. 212.) Chasmanthera columba is another synonym for this plant proposed by Baillon (33). (Nat. Hist. of Plants, Vol. III., London, 1874.)

CAMBOGIA

Cambogia (**Garcinia hanburii**) is a production of a Siamese tree from Camboja, from whence it derived its name. Chinese travelers over a thousand years ago mentioned it, describing the method of obtaining it by an incision in the stem of the tree, whilst the Chinese herbal "Pun tsao" includes it in its pages, the drug being regarded by the Chinese as poisonous, its use being chiefly as a pigment. Clusius (153) described (1605) a specimen of gamboge brought from China in 1603, after which it drifted into European medicine as a purgative. It was one of the articles of commerce of the East India Company, and was recognized pharmaceutically in the shops of the city of Frankfort as early as 1612. The date of the introduction of gamboge into Chinese art and medicine is beyond the records of established history.

CAMPHORA

Camphor (from **Cinnamomum camphora**) has been made in China since the earliest record. Marco Polo (518), who visited that country in the thirteenth century, saw many of the trees producing it. It was known to the Chinese writers of the sixth century, as well as were its qualities as a valuable timber. The earliest mention of camphor occurs in one of the most ancient poems of the Arabic language, by Imru-l-Kais, who lived in the beginning of the sixth century. Camphor was once considered as a rare and precious perfume, being mentioned in connection with musk, ambergris, and sandalwood as treasures of the Sassanian dynasty of the kings of Persia. Notwithstanding all this camphor did not, so far as has been determined, reach Europe during the classical days of Greece and Rome. Possibly the first mention of camphor as a European medicine was by the Abbatissa Hildegarde (316), in the twelfth century. Since its introduction, it has always been an article in domestic medication and as a perfume constituent.

CANNABIS INDICA

This drug (**Cannabis sativa**) is one of the Oriental products, the beginning of whose use is lost in antiquity. Its name threads the literature of Arabia and India, hashish (or *bhang*) being continually men-

tioned in the Arabian Nights (88); e. g., "going up to Gharib, blew the powdered Bhang into his nostrils, till he lost his senses." (Burton edition, vol. vii, p. 76. History of Gharib and His Brother.) Imported into Europe preceding 1690, it passed into disuse until Napoleon's expedition to Egypt (1809-10), when it was again revived by De Sacy and Bouger. Its introduction into European medicine followed (1838-39) the experiments of O'Shaughnessy in Calcutta (484), since which date cannabis and its resin have received a place in most pharmacopeias. From the beginning of East Indian history hemp has been smoked as a narcotic intoxicant, and when surreptitiously added to sweetmeats and foods, has in Oriental life been employed as a narcotic with the utmost recklessness. This is shown in the exaggerations of the Arabian Nights, which portrays so many life habits of those times. This writer found hashish of several qualities in the bazaars of Asia Minor and in Constantinople, one specimen "extra fine hashish" costing in a Constantinople bazaar over two dollars an ounce.

CANTHARIS (CANTHARIDES)

Spanish Flies (**Cantharis vesicatoria**). This once popular remedial agent has lost its position in modern medication. Its use came hand in hand with mediæval medical cruelty, and was an heirloom of ancient heroic medication. Hippocrates (B. C. 375-400) valued cantharides in dropsy and also in amenorrhea, and it goes without question that a substance so heroic in its action would once have been popular in both domestic and professional American medication. Its use in erysipelas and as a plaster, and to "draw the nervous energy and the circulating fluid" to the surface, and "thus again relieve irritation and inflammation of internal parts," are relics of quite recent American medical authority, all writers in good reputation (Regular) commending it highly. At present, however, cantharis is in such disfavor as to make it a novelty for a cantharis plaster to be prescribed by a modern physician of any school, and to ignore its use is no longer a mark of heresy. This change from extreme popularity to practical disuse has come within the experience of this writer.

CAPSICUM

This drug, **Capsicum fastigiatum**, is of American origin, its home being in the West Indies, Mexico, and other tropical countries of America, where it, at the time of the discovery of America, was used by every one as an important pepper in preparing food. In domestic American medicine capsicum has ever been an important remedy, being also a prominent drug in the Thomsonian school (638) of American medicine. It was introduced into the Pharmacopeia and used principally in the form of a tincture, and is now a member of most materia medicas throughout the world. By far the largest amount of capsicum, however, is consumed in culinary directions.

CARDAMOMUM

Cardamom (**Elettaria repens**) has been used in India from a remote period, being mentioned in the writings of Susruta (522). It appears in the list of India spices liable to duty in Alexandria, A. D. 176-180. The Portuguese navigator Barbosa (39) first definitely describes its origin as a product of the Malabar Coast. Since its introduction from the Orient cardamom has been used, as it has been in its home from all time, as a flavor and a stomachic. Several forms of the cardamom are found in the bazaars of Turkey and Arabia, where it is brought by means of caravans. It is largely cultivated at the present time as an article of commerce. This writer found (1907) large cardamom seeds strung on strings and sold by number in bazaars in Asia Minor.

CARUM

Although the home of caraway (**Carum carvi**) appears to have been in the northern and midland parts of Europe and Asia, it was known to the Arabians, and at an early date was introduced into England. In German domestic medicine of the twelfth and thirteenth centuries the word *cumich* occurs, which is still the popular name for caraway in Southern Germany. At the close of the fourteenth century caraway was much used in England, where it was largely employed in cooking. It was not used in India either in cooking or in medicine, nor does it appear in the record of the early days among Indian spices. It has a domestic reach that dominates its every use.

CARYOPHYLLUS

Indigenous to the Molucca Islands proper, cloves (**Eugenia aromatica**) have been an article of Indian commerce since an early date. Known to the Chinese writers of the Han dynasty, B. C. 266 to A. D. 220, cloves became known in Europe about the fourth century, after which they became increasingly an article of commerce, although, for a long time, very expensive. The original home of the clove, the Moluccas or Clove Islands, now produce no cloves at all. The aromatic nature of cloves made of them a great favorite, and they were therefore used to perfume the breath and to flavor food, as well as being employed in domestic medicines, such as stomachic cordials. The well-known Blackberry Cordial of Kentucky is largely spiced with cloves and cinnamon, its blackberry part being the juice of the ripe berries, its alcoholic part being whisky. The domestic use of this pleasant carminative cordial gave it a place in the Pharmacopeia.

CASSIA FISTULA

Galen (254a) mentions a cheap cassia called "fistula," seemingly referring, not to this drug, but to a coarse cinnamon, rolled up as a tube. The fruit now known as Cassia fistula was noticed by Joannes Actuarius (4), of Constantinople, during the thirteenth century, who minutely describes it. The drug is also mentioned by writers of the

school of Salernum. It was a familiar domestic remedy in England at the time of Turner (656), 1568, and as it is carthartic, it naturally appealed to heroic medicationalists. Although carried in the Pharmacopeia, it has never been much used in American medicine.

CHIMAPHILA

Wintergreen, or pipsissewa, **Chimaphila umbellata,** is a creeping evergreen vine native to northern latitudes of Europe and Asia, and found in the United States in shady woods, where it prefers loose, sandy soil. The Indians of North America considered chimaphila of importance, using decoctions of it in nephritic, scrofulous, and rheumatic disorders. Mitchell (441), in his Inaugural Address, 1803, (University of Pennsylvania) gave the drug particular attention, whilst in domestic medicine it was in favor as a tea, in the sections of country in which it was native, its use being especially in rheumatic and nephritic affections. In these directions it crept into some favor with the medical profession, and thus anticipated the uses of salicylic acid and the salicylates, which in structural form are constituents of this plant.

CHIRATA

An annual herb of the mountainous regions of Northern India, chirata (**Swertia chirayita**) has long been held in esteem by the Hindoos, being frequently mentioned by Susruta (522). It did not attract attention in England until 1829, and was introduced into the Edinburgh Pharmacopeia in 1839. It was first described by Roxburgh (559) in 1814. No record of its introduction into Indian medicine nor to its original usage is possible, other than that it is a gift of native medication and is described in Sanscrit writings.

CHONDRUS

Irish Moss, **Chondrus crispus,** has been known from an early period, its use being chiefly as a domestic medicine. The London or British Pharmacopeia never gave it a position. Todhunter at Dublin 1831, introduced it to the notice of the medical profession. The method of its employment is yet in decoction or infusion, no attempt being made to improve upon its domestic form.

CHRYSAROBINUM

This substance, formerly supposed to be identical with crude chrysophanic acid, is derived from *Goa Powder,* a deposit found in the cavities of the trunk of the *Andira araroba,* a South American tree. It is used in skin diseases in the same manner as the crude Goa powder, from which it is simply a separated material. Goa powder was employed in native medication as a remedy in skin diseases, which brought it to the attention of physicians and led to its introduction into medicine, as well as its final insertion in the Pharmacopeia.

CIMICIFUGA (MACROTYS)

Cimicifuga is abundantly distributed in rich woodlands over the greater portion of the United States east of the Mississippi River, except in New England and the extreme South. It is also found in Missouri and Arkansas. Cimicifuga was observed by the earliest European travelers in America, being carried to England in 1732, and first described by Plukenet (514a) in 1696. All pre-Linnæan writers classed the plant with actæa, mostly under Tournefort's (649) name, Christopheriana. Linnæus (385) gave it the name Actæa racemosa, under which it was classed until Pursh (528) referred it to the genus cimicifuga. Rafinesque (535), 1808, by reason of the fact that the fruit of the plant does not accord with that of either actæa or cimicifuga, proposed the name Macrotys actæoides, changing the name in 1828 to Botrophia serpentaria. Eaton (211) in the fourth edition of his Manual followed Rafinesque, calling the plant Macrotys serpentaria.

Cimicifuga was highly valued by the Indians, who employed decoctions of the drug for diseases of women, for debility, to promote perspiration, as a gargle for sore throat, and especially for rheumatism. These uses by the Indians introduced the drug to early "Domestic" American medicine, and it was consequently given much attention by the earliest writers, e. g., Schoepf (582), 1785; Barton (43), 1801; Peter Smith (605), 1812; Bigelow (69), 1822; Garden (256a), 1823; Ewell (230), 1827; Rafinesque (535), 1828; and Tonga and Durand's (222) addition to Edwards' and Vavasseur's Materia Medica, 1829. None of these authorities, however, added anything not given by the Indian, so far as the field of action of the drug is concerned, excepting perhaps the statement of Howard (329), 1832, who was an enthusiast in favor of macrotys in the treatment of smallpox, a claim supported forty years after by Dr. G. H. Norris, 1872, in a paper read before the Alabama State Medical Association. He reported that during an epidemic of smallpox in Huntsville, Ala., families using macrotys as a tea were absolutely free from smallpox, and that in those same families vaccination had no effect whatever, so long as the use of macrotys was continued. (See Lloyd Brothers' Drug Treatise No. XIII, Macrotys.)

CINCHONA

Tradition states that the medicinal qualities of cinchona (**Cinchona calisaya**) were known to the aborigines of South America from the earliest times. Arrot (Philosophical Transactions, xl, 1737-8, p. 48) states that the qualities and uses of the bark of cinchona were known to the Indians before the days of the Spanish conquest. Others declare that the Peruvians distrusted the drug, considering it dangerous; Markham (406) asserting that the native doctors did not employ it. Preceding 1739, a Jesuit missionary, however, was cured of fever by the bark, administered to him by an Indian; a like incident being recorded concerning the Spanish corregidor of Loxa, in 1630. In 1638, the wife of the Viceroy of Peru, the fourth Count of Chinchon, being attacked by a fever, was cured with the powdered bark, which being commended by her, gave to it the name, "The Countess' Powder," or

cinchona. Introduced into Spain under the name Jesuit bark, or powder, as well as cinchona, it passed thence into other European countries, being largely distributed by the Jesuit Fathers.

Acrimonious discussions, too numerous and too personal to attempt to record, followed the inroads of this once rankly empirical drug, which, however, was possessed of qualities sufficient to establish it finally in the favor of "regular medication." It was introduced into England about 1656, commanding then a price many times above that of opium.

CINNAMOMUM CASSIA

Probably this is the first spice sought in the commerce of the Orient or from the Indian Ocean, its early record being lost in antiquity. It is mentioned as a precious spice in the Psalms, Proverbs, Ezekiel, Revelation, etc., and by the ancient historians Theophrastus (633), Herodotus (314a), Galen (254a), Dioscorides (194), Pliny (514), Strabo, and others. No distinction was then drawn between cinnamon and cassia, the difference being considered one of quality only. Cinnamon and cassia are mentioned as ranking in value with gold, ivory, and frankincense, and as being among the most costly of the offerings in the temple of Apollo in Miletus, B. C. 243. No mention is made in any old historical document of its being derived from Ceylon. It is accepted as being mentioned in the Chinese herbals from 2700 B. C. to 1200 B. C. Many varieties of the tree are found in India, as well as in Ceylon, in which country, however, no mention of cinnamon is made prior to the thirteenth century. Cassia and cinnamon were employed as spices and remedies, especially by the aborigines, and in the religious services of the early peoples of the countries mentioned. The aromatic drugs drifted into Europe as exceedingly rare and valuable products some time before the date of the East India Company. Cassia was one of the ingredients of the embalming mixtures used by the Egyptians (see Myrrh).

COCA (THE DIVINE PLANT OF THE INCAS)*

Erythroxylon coca is a tree native to the eastern slopes of the Andes, where, especially in Bolivia, large plantations are cultivated. The leaves have been highly valued, from the earliest records, by the natives of Peru, Chili, and Bolivia, by whom the tree was called "The Divine Plant of the Incas." In 1569, Monardes (447), of Seville, published an article on the drug, reproduced, 1577, in London. (Dowdeswell (196a).) This is among the first references to the drug in print, known to us, and it was followed by the botanical description, by Clusius (153), in 1605.

The history of coca, in its many phases, is most exhaustively presented by several travelers and authors, a large illustrated work of near 600 pages by W. Golden Mortimer, M. D., under the title *Peru. History of Coca,* being of exceeding interest (451a).

* Published October, 1910, in the Practical Druggist and Pharmaceutical Review of Reviews.

That coca was honored in their sacred ceremonies by the natives of the lands producing it, is evidenced by the following "recital" (451a), addressed to the sovereign:

> Oh, mighty lord, son of the Sun and of the Incas, thy fathers, thou who knoweth of the bounties which have been granted thy people, let me recall the blessings of the divine Coca which thy privileged subjects are permitted to enjoy through thy progenitors, the sun, the moon, the earth, and the boundless hills.

A plant so regarded necessarily fell under the adverse criticism of the devoutly religious, early Spanish explorers, who naturally directed their efforts against everything that, in their opinion, constituted a part of heathen worship and diverted the natives from the true God. This is shown by the following quotation from Mortimer:

> In 1569 the Spanish audience at Lima, composed of bishops from all parts of South America, denounced Coca because, as they asserted, it was a pernicious leaf, the chewing of which the Indians supposed gave them strength, and was hence: *"Un delusio del demonio."*

In this connection the following quotation will indicate how distasteful are the methods of the natives, even yet, to those whose first duty consists in suppressing such ceremonies as are therein described:

> When the period for departure (on a dangerous journey.—L.) actually arrives, the Indians throw Coca in the air, just as did the Incan priests of old, to propitiate the gods of the mountains, who, presumably, do not wish their domains invaded.

The native Indian use of coca was exhibited where it was necessary for men to make the most exhausting physical effort, as the Indian "runners" of the Andes, carrying with them a modicum of food or other burdens. A few coca leaves sufficed as a hunger pacifier, and upon this as a basis the runners underwent the most exhausting and exacting journeys. It was accepted by observing travelers that the leaves, being chewed, would yield an abundance of "vital strength." The endurance of people thus employing the drug is noted also by the Jesuit Father Blas Valera (656*d*) under the name *Cuca*. After observing the methods of the Jesuit explorers, he writes as follows:

> It may be gathered how powerful the *Cuca* is in its effect on the laborer, from the fact that the Indians who use it become stronger and much more satisfied, and work all day without eating.

Notwithstanding all this, fortified by repeated experiences of travelers, the world of scientific medicine ignored, or even ridiculed, the drug, until its emphatic introduction in the latter part of the last century (about 1870, in England), forced those concerned in authoritative medicine to give it some recognition. Numerous experimentations on its composition had been made by Dr. Weddell, in 1850 (671), and others, succeeding as well as preceding that date, who tried vainly to discover an energetic constituent of the drug. It was at first believed that the leaves owed their inherent qualities (if they had any, which was questioned) to some volatile principle, a supposition that proved a fallacy, other than in the discovery of the volatile base named by them *hydrine*, which did not at all represent coca and which is no longer mentioned. However, the persistent reports concerning the use of coca

and its reputed powers as an empirical substance that was creeping into the use of practicing physicians, led such chemists as Hesse, Niemann, Stanislas, Martin, Maisch, Lossin, Woehler, and many others, to repeated chemical examinations of the drug and its qualities, resulting in a number of products, such as coca-wax, coca-tannic acid, and even of several alkaloidal bases, including one named *cocaine,* this alkaloid being discovered in 1860 by Niemann, an assistant in the laboratory of Professor Woehler, of Göttingen, Germany.

But notwithstanding the identification, half a century ago, of its now well-known alkaloid, coca was long thereafter "authoritatively" considered as inert, or simply a mild stimulant, like tea. Its alleged properties were deemed legendary and imaginary, its alkaloid similar to caffeine, both in constitution and qualities. This view prevailed until Koller, in 1884, confounded the professional world, as well as that of science, by announcing thte marvelous qualities of cocaine as a local anesthetic. In this connection we may further anticipate by saying that previous investigators of coca had already employed the physiological method of injecting the alkaloid cocaine into the veins of the lower animals, as well as the utilization of other scientific methods of determining its value, such "authoritative" investigations being accepted as conclusive evidence of the fact that coca, other than as a mild stimulant, like tea or coffee, was worthless and inert, and that its alkaloid, cocaine, was similar in effect to caffeine. Physicians using coca were thus becoming subjects of ridicule, as being incapable of judging a remedy's qualities; pharmacists making preparations of the drug were tinctured with the odium of being concerned in a fraud, while the natives who employed it in their daily life, as well as travelers impressed thereby, were regarded as being involved in ignorance and imbued with superstitious imaginings. Into these classes were thrust such men as Poeppig, von Tschudi, Scherzer, Stevenson, Weddell, Spruce, Markham, and others, scientists and travelers, who spoke from personal observation or experience. Although other pessimists contributed in the same direction, the most authoritative investigations to discredit coca appeared in the London *Lancet,* 1876 (196a), and in the *Edinburgh Medical Journal,* Vol. XIX, 1873 (55b), which may be summarized as follows:

G. F. Dowdeswell, B. A., of London, England, being conversant with the record of coca and much interested in the subject, determined to establish its position unquestionably, by personal experimentation in a scientific way. With this object, he made a careful study of the record of coca (196a) and its reputed action. He took pains to credit those who had previously made reports, describing in detail the processes of the native coca users, and including the experiments of Dr. Alexander Bennett, 1873 (55b), in which the physiological action of cocaine on frogs, mice, and rabbits gave no therapeutic promise of individual characteristic other than the suggestion that it paralleled caffeine, theine, and theobromine, the summary (Bennett) being as follows:

> When we compare this cocaine with theine, caffeine, and guarana, we find that if it is not identical with these substances, it is intimately related to them in chemical composition; (p. 324).

The investigator had not enough cocaine to give completely its action on temperature and the glandular secretions, but adds that (p. 235) (55b), as compared with caffeine, theine, and so forth, "in every other respect cocaine had similar action," thus giving it no quality of its own (55b).

Having reviewed the literature on coca (including Bennett's physiological investigations on cocaine), Dowdeswell first obtained specimens of the drug, of unquestioned quality. He then interested in his work such authorities as Ringer (who furnished instruments of "perfectly accurate results") and the conspicuous Professor Murrell, of University College. The preparations employed were made by the well-known English chemist Mr. Garrard, referred to by Dowdeswell as follows:

> All of which were well prepared by Mr. Garrard, of University College Hospital, who has taken much interest in the subject, and who has also very successfully obtained the alkaloid and the volatile constituent of the leaf, and is still continuing an investigation of its pharmaceutical properties, for which his skillful preparations of other previously unknown alkaloids, as of jaborandi, eminently qualify him.

The preparations made by Garrard were not only such as paralleled the products of the native users of coca, but also included others, suggested by his own chemical and pharmaceutical knowledge. The experimentation considered, in detail, bodily conditions, rate of pulse, temperature, urine, urea excretion, etc., etc., as influenced by coca. Two detailed tables (p. 666) (196a), give the results, which, to the utter disparagement of coca, are summed up by Dowdeswell as follows:

> It has not affected the pupil nor the state of the skin: it has caused neither drowsiness nor sleeplessness; assuredly it has occasioned none of those subjective effects so fervidly described and abscribed to it by others—not the slightest excitement, nor even the feeling of buoyancy and exhilaration which is experienced from mountain air, or a draught of spring water. This examination was commenced in the expectation that the drug would prove important and interesting physiologically, and perhaps valuable as a therapeutical agent. This expectation has been disappointed. Without asserting that it is positively inert, it is concluded from these experiments that its action is so slight as to preclude the idea of its having any value either therapeutically or popularly; and it is the belief of the writer, from observation upon the effect on the pulse, etc., of tea, milk-and-water, and even plain water, hot, tepid, and cold, that such things may, at slightly different temperatures, produce a more decided effect than even large doses of Coca, if taken at about the temperature of the body.

The result of the investigations of these eminent authorities, in connection with the physiological experimentations wth cocaine, demonstrated to the satisfaction of the world of science and the professions that this drug was, at the very best, merely a something in the line of the caffeine-bearing stimulants, such as tea and coffee, and, next, that instead of being of any value whatever, or of possessing any inherent quality whatever, it was positively inert, having (196a)

> an action so slight as to preclude the idea of its having any value, either therapeutically or popular;

that it has no greater effect on the pulse than

tea, milk-and-water, or even plain water, hot, tepid, and cold;

that it

occasioned none of those subjective effects so fervidly described and ascribed to it by others—not the slightest excitement, nor even the feeling of buoyancy and exhilaration which is experienced from mountain air, or a draught of spring water.

To this may be added the similar results obtained by Professor Roberts Bartholow, M. D,, to the effect that "it acts like theine and caffeine as an indirect nutrient," etc. (*Therapeutic Gazette*, July, 1880, p. 280) (564).

Just at that time the American "New Remedy Craze" of the 70's was at its height. Among the substances eulogized was coca, which had received thereby a position in the Prices Current of all the American manufacturing pharmaceutical establishments, as well as the eulogistic commendations of physicians in American medical prints.

Paralyzing to such as these were the adverse "authoritative" reports concerning the worthlessness and inertness of the drug (196a). All this, together with the variations in the quality of the commercial article (such variations in quality being confirmed later by Professor H. H. Rusby, M. D.), very much disturbed the talented, careful, and exceptionally conscientious chemist, the leading American manufacturing pharmacist of that date, Dr. Edward R. Squibb, of Brooklyn, N. Y. In the height of the commercial demand for coca he determined to sacrifice his commercial opportunities to his professional ideals, and to accept the provings of "scientific authority," by excluding all coca preparations from his pharmaceutical list, commending tea and coffee in their stead. He writes as follows in his *Ephemeris* (610a), July, 1884:

Almost every purchase (of the crude drug.—L.) has been made on mental protest, and he (Squibb) has been ashamed of every pound of the fluid extract sent out, from the knowledge that it was of poor quality; and there seems to be no more prospect of a supply of a better quality than there was this time last year, because so long as an inferior quality sells in such enormous quantities at good prices, the demands of trade are satisfied.

Under this condition of the markets, the writer has finally decided to give up making a fluid extract of Coca, and has left it off his list, adopting a fluid extract of tea instead, as a superior substitute, for those who may choose to use it, and regrets that this course was not taken a year ago.

Dr. Squibb, however, with even more than his usual carefulness and desire to extend professional courtesy to one and all, perhaps guided also by a latent questioning of the possibility of paralleling the action of a drug in abnormal conditions of the human being by a study of the action of that drug on the lower animals or even on a man in health, refers to the fact that "authorities are often in error or opposed in opinion," fortifying this statement in the following words:

Conflicting and contradictory testimony from competent authority is not uncommon in therapeutics, and the reasons for it are well recognized in the impossibility of an equality in the conditions and circumstances of the investigations, and hence the general decision commonly reached, is upon the principles of averages.

And yet, the investigations of Dowdeswell seeming incontrovertible, Dr. Squibb adds as follows:

But there has been no observer on either side whose researches have been anything like so thorough, so extended or so accurate as those of Mr. Dowdeswell. Indeed, no other account has been met with, wherein the modern methods of precision have been applied to the question at all; the other testimony being all rather loose and indefinite, often at second or third hands, or from the narratives of more or less enthusiastic travelers. But if Mr. Dowdeswell's results be accepted as being conclusive, the annual consumption of 40,000,000 pounds of Coca, at a cost of $10,000,000, promotes this substance to take rank among *the large economic blunders of the age.*

Now came the "irony of fate!" Scarcely had the ink dried in the publication *(Ephemeris)* aforenamed, recording Dr. Squibb's faith fore it was announced in a letter to Dr. Squibb, dated September 19, 1884, from Dr. Henry D. Noyes, a physician of New York then in in the results of the investigations of Bennett and of Dowdeswell, be- Kreuznach, Germany (*Ephemeris,* Nov., 1884, p. 685), that a medical student named Koller, of Vienna, had discovered that a solution of hydrochlorate of cocaine was possessed of marvelous qualities as a local anesthetic.

This letter of Dr. Noyes was immediately given a setting, or reference was made thereto, in every pharmaceutical and medical journal of America. Such an authority as Dr. D. Agnew, of Philadelphia, wrote as follows in the *Medical Record,* October 18, 1884:

We have to-day (Oct. 18, 1884), used the agent in our clinic at the College of Physicians and Surgeons, with most astonishing and satisfactory results. If further use should prove to be equally satisfactory, we will be in possession of an agent for the prevention of suffering in opthalmic operations of inestimable value.

Came also leading editorials in the various publications on medicine and pharmacy, of which that from the pen of the then editor of the *Druggists' Circular,* Mr. Henry B. Parsons, brother of the present editor of the *Practical Druggist,* is typical. From it we quote as follows:

For the past month American medical journals have fairly bristled with reports from various hospital surgeons, and it is pleasing to note that, on the whole, the claims first made for this remedy have been sustained. It seems to be proved that, in the majority of cases, the application to the eye of a few drops of a 2 or 4 per cent solution of this salt will produce a more or less complete, but transient, insensibility to pain, with enlargement of the pupil. Operations upon the conjunctiva and cornea ordinarily requiring the use of chloroform or ether have been performed upon patients conscious of everything being done, but saved from pain by the application of a weak aqueous solution of this salt. In several operations for removal of hard cataract, the patients complained of no pain whatever, the entire conjunctival surface being insensible to repeated pinchings with the surgeon's forceps. The only sensation described was that of "numbness and hardness." After a time the eye returns to its normal sensitiveness, and there seems to be no troublesome local after-effects.

Let it be observed that in the beginning cocaine was commended in operations on the cornea of the eye, its latest application in minor operations in surgery, dentistry, and elsewhere being at that time not even a theoretical possibility.

Turning his face to the future, and accepting the facts of the pres-

ent, Dr. Squibb now threw all his efforts into a new investigation of coca and its alkaloid, his process of manufacture being yet a standard, and his writings on cocaine being yet authority. These need but be referred to as occupying many pages in the *Ephemeris*, 1884-5. They stand as a lasting memorial to the man who took pleasure in publicly correcting an error, and whose record in American pharmacy is monumental.

The discovery of the anesthetic qualities of coca marked the beginning of an epoch in medication whose story, in connection with the past, pleads irresistibly for tolerance of thought and action toward men who know that which they know by reason of personal experience and the art of empirical experimentation. Perhaps in no other instance has the almost hopeless cry for recognition of the facts developed by empiricism been more prominently illustrated than by the struggle of this drug. One of the greatest blessings to humanity, it was for nearly three centuries neglected by men of science and subjugated by professional prejudices. At last the eminent botanist and pharmacologist Henry H. Rusby, M. D., was led to undertake a journey to South America in behalf of science, coca being a dominant factor, in which enterprise the great pharmaceutical house of Parke, Davis & Co., of Detroit, who financed the expedition, deserves great credit. The result of Dr. Rusby's study is presented in *The Therapeutic Gazette* (564), 1886, pp. 14-18, and 1888, pp. 158-303, and it may be added that this exceptionally valuable treatise is at this date not less important than when written.

Needless is it to do more than refer to the marvelous reaction that followed Koller's discovery of the power of cocaine as a local anesthetic. A library would be required to shelve the works devoted, eulogistically, to the new discovery. A volume would scarcely print the names of the enthusiastic converts to cocaine, formerly so discredited, and the titles of their contributions.

Let us now do tardy justice to the prophetic words of the seer-like poet, who so often foresees that which others either neglect or do not appreciate. The poet Cowley, 1618-1667 (170a), in his *Book of Plants*, published in 1662, not only mentions coca, but sets forth that marvelous drug in terms that, neglected and discredited for nearly three centuries, need to-day no apology, as evidenced by the following translation:

Eulogy of Coca

From Cowley's Book of Plants,* V: 783-838.

Translated from the Latin by Margaret Stewart, M. A.

The vine departs; and all the deities of the old world applaud, and with purpled hands seize the clusters. Bacchus, in jesting

*In this portion of the poem, Cowley describes a feast of the gods, including the deities of both the New and the Old Worlds. Venus presides, and Bacchus offers wine to Omelochilus, a South American deity. Pachamama (the "skin mother") is a leading deity of the Incas. The "Quitoita," "Vicugni," and "Paci" are tribes of Indians, now obscurely known. The translation is in most cases strictly literal, but in a few lines the sense requires a somewhat free rendering. Several editions of Cowley's "Sex Libri Plantarum" are on the shelves of the Lloyd Library. The one from which the translation is made was printed in London, 1678.—S.

mood, brings a generous cup of wine, pressed from many grapes, to thee, Omelochilus. "Come, drink, comrade," he said. "If thou dost taste this wine, no other of the gods will be more fit than thou to tempt the crude appetites of the cannibals."

And Omelochilus, not accustomed to the acid Grecian wine, drinking it, rages in frantic wrath, and would doubtless repay the jest with blows, but fears the well known strength and courage of the European deity. Therefore (to be quits with his tormentor.—S.) he bids the fruits advance to strife less cruel. They all stand forth in beautiful array, displaying their various products, and like Amazons they advance, with pictured armor.

First in line, dishonored from lack of fruit,* stands Coca, a little tree, gleaming with slender stem. And Venus scoffs. "Truly, the race of American husbandmen have chosen with little judgment, coming into a contest as regards fertility with a dwarf eunuch as their leader." The gods shout with laughter. But Mother Pachamama rebukes the bold goddess, and defends her loved Coca. "How greatly dost thou err, Cytherea! Truly, the lustful fertility of lovers is alone known to thee. Here, thou art a bad judge. My realms, lacking sex, are an unknown country to thee. Beyond all others, everywhere, the land is fertile. This tree at which you scoff, is perennially fertile, and ever swells with unnumbered fruits. Do you still laugh? See how full of leaves it is! In every leaf it bears a fruit. Nor will these leaves yield in usefulness to any fruits from any tree. These, by the wonderful gift of Pacchamacus Virococha (who was moved to pity by the coming hardships of the land, reduced to poverty because of its too great wealth), remaining for a time in the mouth, the juice trickling thence continuously to the stomach, restore the weak, made languid by long continued hunger and lengthened toil, and give back vigor to the limbs and strength to the weak body, tottering under its burden, in a manner such as you, Bacchus and Ceres, deities both, could never do. The Quitoita, carrying three of these as supplies for their journey, will sometimes endure for twice three days, and feasting abundantly upon these, will traverse the dreadful Andes, a frightful land, situated among the highest clouds, the home of winds and rain and winter storm, and likewise thine, brave Coca, whom the warlike goddess Venus derides as an insignificant leader. Nor shalt thou be less esteemed for thy admirable qualities, illustrious Coca, than for thy services to mankind. The merchant fears not to seek thee here, to bear thee hence. Yearly he loads the groaning Vicugni and Paci in countless numbers with thy leaves, bringing a pleasing commerce to the wretched world."

Thus speaks the mother Pachamama, her skin painted with numberless figures, and with a nod she bids Hovia to advance, Hovia, bearing fruits stony and despised, but ranking next in value (to those of Coca.—S.) though of different kind.

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*The shrub coca bears a creamy white flower, and a berry somewhat like a small cranberry, red when immature. but darkening to nearly black. Of this Cowley was evidently unaware.—S.

COCCUS

The cochineal insect, **Pseudococcus cacti,** is native to Mexico and tropical America, where it feeds on certain species of cactus. These insects were thence imported into the Canary Islands, where they are raised in large numbers, as well as in the West Indies and other countries. They are sources of great profit to the Mexicans, who, so far as known, have always been acquainted with their quality of imparting a red color to confectionery and pastry, for which purpose (and as the source of carmine) they are still chiefly employed. In domestic medicine they have been commended in whooping cough and neuralgic affections, but have never been seriously considered by the medical profession.

COLCHICI CORMUS ET SEMEN

Colchicum (**Colchicum autumnale**) was known in very early days, Dioscorides (194) mentioning its poisonous properties. It was used as a rheumatic or gout remedy by the Arabians, as noted in the writings of Tragus (650), 1552, who warns his readers against its use in gout. It was employed empirically in these directions in domestic English medicine, but was, however, in disfavor with the medical profession, being called by them *Colchicum perniciosum*, and considered "very hurtfull to the stomacke." Wedel (672), in 1718, held colchicum in great disfavor, as indicated by the following quotation: "Velut in fame habitum et damnatum fuit colchicum, indignum habitum inter herbas medicas vel officinales."

Colchicum was mentioned in the London Pharmacopeia, second edition, 1618, and was given an occasional place in subsequent editions, but was altogether omitted in the editions between 1650 and 1788, after which, owing to the investigations of Störck (617), it was again given an authoritative place.

COLOCYNTHIS

The colocynth plant occupies the vast area extending from the west coast of Northern Africa (Senegambia, Morocco, and the Cape Verde Islands), eastward through the Sahara, Egypt, Arabia, Persia, Beluchistan, and through India, as far as the Coromandel Coast and Ceylon, touching northward the Mediterranean and Caspian Seas. At the Red Sea, near Kosseir, it occurs in immense quantities (239-240). It is also found here and there in Southern European countries, e. g., Spain and the islands of the Grecian archipelago. Isloated specimens occur in the Cape of Good Hope, Japan, Sicily (57), and it is suggested that birds of passage have much to do with the distribution of the seed. Even from our hemisphere we have recent reports of its successful cultivation on a small scale.

In the island of Cyprus the raising of colocynth has been a source of revenue since the fourteenth century, and it still forms an article of export at the present time.

Colocynth, as already stated, is a characteristic desert plant. Hooker and Ball (323a) met with it in the oasis of Sheshuaua in

Morocco, and state that this characteristic plant of the desert region in North Africa rarely approaches the sea shore. The fruit is used in Morocco for the purpose of protecting woolen clothing from moths; but according to the testimony of these observers the purgative qualities of colocynth do not seem to be known to the native doctors.

Volkens (664a) enumerates citrullus colocynthis (L.) Schrader, among the plants growing in the Egypto-Arabian deserts, pointing to its exceedingly rapid development, especially the fruit, which attains a diameter of ten centimeters. After the vine has withered away the fruits may be seen lying in the sand of the desert, ten to fifteen in number, about each plant. Volkens saw the plant in bloom in May as well as in December, and reports that when the plant is torn from the ground it withers in a short time, owing, he thinks, to the delicacy of the microscopical structure of the leaves.

A brief account of the growth of colocynth in Palestine by E. S. Wallace has more recently appeared in the United States consular reports (1895), from which we abstract the following points of interest: The fruit grows abundantly between the mountains of Palestine and the eastern shore of the Mediterranean, from the city of Gaza northward to Mount Carmel. The plant thrives without any attention whatever on the part of the husbandman, since the climate and soil are all-sufficient for its perfect growth—the natural requirements being merely a sandy soil, warm climate, and little moisture. The fruit which is known in commerce as the Turkish colocynth is collected by the native peasants (fellaheen) in July and August, before it is quite ripe, and is sold to Jaffa dealers, who peel it and dry the pulp in the sun. It is then molded into irregular small balls, packed in boxes and exported, mostly via England. The average annual shipments are stated in the consular reports to be ten thousand pounds, but these must have fallen off considerably during recent years. The reason for this, as we learn from another source, lies undoubtedly in the export tax. The report suggests that probably colocynth may be profitably cultivated in certain parts of the United States.

In this connection we may point to Prof. L. E. Sayre's paper (Am. Journ. Pharm., 1894, p. 273) on American colocynth, and the cultivation of colocynth in Montreal as reported in 1895 by Prof. T. D. Reed (Montreal Pharm. Journ., 1896, p. 334).

The drug is imported from Spain, Triest, Smyrna, Mogador, and elsewhere (501).

CONIUM

Conium maculatum is native to Asia Minor and the islands of the Mediterranean. It has been naturalized in North and South America and throughout England and other similar locations. It was known to the Greeks, who are said to have used it to execute criminals. It was long known under the name *Cicuta*, but to avoid confusion with *Cicuta virosa*, Linnæus (385) in 1737 restored its classical name, *Conium maculatum*, or poison hemlock, the word hemlock being Saxon, meaning *leek of the border*, or *shore*. Störck (617), of Vienna, in 1760,

introduced Conium into regular medicine. Tradition has it that the decoction of this plant was the φάρμακον drunk by Socrates (334).

CONVALLARIA

Lily of the Valley, **Convallaria majalis,** is recorded as one of the earliest of domestic remedies, being accepted by Dr. Squibb (610a) as "continuously used in medicine for several hundred years (*Ephemeris,* January, 1884). In *The British Medical Journal,* November, 1883, Dr. Edward Drummond, of Rome, states that in a book of *Commentaries on the Materia Medica of Dioscorides,* Venice, 1621, Dr. Pietro Andrea Matthioli (414) speaks as follows of its use in cardiac diseases:

> The Germans use lily of the valley to strengthen the heart, the brain, and the spiritual parts, and also give it in palpitation, vertigo, epilepsy, and apoplexy, etc.

This article led Dr. Squibb, in connection with some private information in a letter from "a very careful and close observer" (Squibb), to favor the drug as a hopeful remedy that in specific and restricted directions would be better employed than digitalis. To such an extent was he impressed in its favor as to lead him to write (1879):

> It is to be hoped that the revision committee will recognize it in the forthcoming issue of the U. S. Pharmacopeia.

The commendations of Dr. Squibb were probably instrumental in obtaining for convallaria this honor, for in 1900 it obtained official recognition.

In Russia convallaria was investigated by the medical profession as early as 1880, having long before been used in dropsy by the people. About 1883, as already stated, it became fashionable elsewhere, being generally commended as a substitute for digitalis in certain specific directions.

A study of the chemistry of the drug antedated "authority" in medicine, for in 1858 G. F. Walz published an analysis in the *N. Jahrbuch f. Pharm.,* describing two "most important constituents," viz., *convallarin* and *convallamarin.* He states that his experiments were made long before their publication. It is to be seen that the empirical use of convallaria unquestionably prevailed centuries before its exploitation as a "fashionable" remedy by the licensed profession of medicine (1883), the chemist also anticipating its probable employment in orthodox therapy.

COPAIBA (COPAIFERA OFFICINALIS*)

Copaiba (popularly known as balsam of copaiba) is obtained from South America, principally from Brazil and Venezuela, being produced by numerous species of the genus copaifera. This genus belongs to

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* ON THE SPELLING OF THE NAME COPAIFERA LANGSDORFFII.

FROM A LETTER BY CHARLES RICE, NEW YORK, TO JOHN URI LLOYD.

I can not refer to Desfontaines' original (Mem. Mus. Paris, VII. (1821), 377), but to judge from the Kew Index and some other authorities, Desfontaines spelled the species name L a n s d o r f i i. And from Desfontaines the mistake passed into many succeeding

the suborder of cæsalpinieæ, of the vast order of leguminosæ, and differs from the ordinary type of the order, as we usually know it, in having more regular flowers (papilionaceous), resembling in this respect our honey-locust (gleditschia triacanthos) and coffee-nut (gymnocladus) tree.

The various species of copaifera which grow in tropical America are usually small trees (sometimes shrubs).

Flueckiger traced the record of what is probably the first printed statement regarding a resiniferous tree other than the pine, dating back to the last decade of the fifteenth century. He quotes from Michael Herr, "Die Neue Welt der Landschaften und Insulen," Strassburg, 1534, which contains a report made by Petrus Martyr of Anghiera to Pope Leo X, wherein this tree is mentioned under the name *copei*.

The next available record dates from a publication of the year 1625, wherein a Portuguese monk, probably Manoel Tristaon (651a), of the convent of Bahia contributes an extensive chapter on Brazil and its products. On page 1308, immediately following the description of *Cabueriba* (or Peru balsam tree) he says: "Cupayba. For wounds. Cuypaba is a fig tree, commonly very high, straite and big; it hath much oile, within; for to get it they cut the tree in the middest, where it hath the vent, and there it hath this oil in so great abundance that some of them doe yield a quarterne of oile and more; it is very clear of the color of oile; it is much set by for wounds, and taketh away all the skarre. It serveth also for lights and burne well; the beasts knowing the vertue thereof doe come and rubbe themselves thereat. There are great store, the wood is good for nothing."

The first explicit description and illustration of one of the trees yielding copaiba is to be found in the joint work of Piso and Marcgrav (511) (1648), whose statements form the basis of the subsequent literature on the subject. In this connection it appears rather remarkable that the Pharmacopœia Amstelodamensis, sixth edition, which antedates this publication, being of the year 1630, distinctly mentions *Balsam copae yvae*. Some of the statements of Piso and Marcgrav have given rise to discussion; the fact that Piso figured and described the flowers with five sepals, whereas they are now known to bear only four, being one of the points. The pod, however, is figured and described correctly, and the statement is made that it contains an edible nut, which the monkeys of the forest are very fond of eating. As regards the mode of collecting the balsam, Piso relates that an incision

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books. Even Bentley and Trimen took up the mistake, particularly emphasizing that Langsdorfii is wrong. The mistake was pointed out long ago in the Pharmaceutical Journal, IX (1879), 773, and also by Flueckiger in Pharmacographia (see 2d ed., p. 228, footnote).

Some of the botanical authors who happened to know better corrected the mistake without making any remarks. Thus, for instance, Baillon has it right in all his works, for example, in Histoire des Plantes, II, 163; also, Rosenthal in his Synopsis Plantarum Diaphoricarum, p. 1046, etc. They write Langsdorffii (with g and two f's).

George Heinrich, Freiherr von Langsdorff, was born on April 18, 1773, at Woellstein in Rhenish Hesse, studied medicine in Goettingen, then went to Portugal, where he remained from 1797 to 1803. He then participated in Krusenstern's Russian exploring expedition, after which he became Russian chargé d'affaires in Brazil. In 1831 he returned to Germany and died at Freiburg in the Breisgau on June 29, 1852. He wrote an account of Krusenstern's expedition, under the title, "Bemerkungen auf einer Reise um die Welt," 2 vols. Frankfurt o. M., 1812.

is made through the bark deep into the pith, at the season of the full moon, which causes such an abundant flow of fatty and oily liquid that twelve pounds may exude in three hours. In case no oil should appear, the opening is at once closed with wax or clay, and after two weeks the yield is sufficient to make up for the delay. The fact that the resiniferous ducts in these trees often attain a diameter of one inch, as has been observed more recently by Karsten, seems to be quite in harmony with the statement regarding the abundant yield. It is also related that frequently the balsam accumulates in these ducts and exerts pressure enough upon the enclosing wall to burst the tree with a loud report. According to Piso, the copaiba tree is not very frequent in the Province of Pernambuco, but thrives luxuriantly in the Island of Maranhao, which, he says, furnishes the balsam of commerce in great quantity. He also enumerates the many medicinal virtues of the balsam, making the curious statement that its healing virtues are also experienced as an efficient means to check the flow of blood in the Jewish practice of circumcision.

Labat (365) reports that in 1696 he had an opportunity to observe for the first time the tree yielding copaiba in the Island of Guadeloupe. He relates in detail the manner of collecting the balsam, which he calls huile de copau. The vessels in which the balsam is collected are made of the fruit of the calabash, a kind of gourd. The collection, he states, takes place about three months after the rainy season; that is, in March for the countries north of the equator, and in September for the countries south of this line. The balsam, he states, closes all kinds of wounds except those inflicted by gunshot. He declares it to be a powerful febrifuge, having been used with almost marvelous effect in the fever epidemics at Rennes and Nantes in 1719.

Nic. Jos. Jacquin (338a), a noted Viennese botanist who traveled in the West Indies in Linnæus's time, first observed the tree yielding copaiba in cultivation in the village of Le Carbet at Martinique, and subsequently (1760 and 1765) described it under the name of copaiva officinalis. He states that this tree was indigenous to the continent, where it grows frequently around the town of Tolu near Carthagena promiscuously among trees yielding balsams of Tolu and Peru. Jacquin described the flowers of this tree as having four petals, and the calyx as being nonexistent; yet he considers it identical with that of Piso and Marcgrav, which is, however, emphatically denied by De Tussac (656a) in Dictionnaire des Sciences Naturelles.

Linnæus (385), in 1762, gave Jacquin's plant the name Copaifera officinalis.

Until 1821 it was generally believed that copaifera officinalis was the only tree yielding copaiba; in this year, however, Desfontaines (189a) added two new species, C. guianensis and C. Langsdorffii. At the same time Desfontaines changed the name of C. officinalis to C. Jacquini, in honor of its discoverer. The fact that Jacquin's plant was foreign to Brazil and yielded a balsam of inferior quality would indicate that it could not well have been the official balsam tree, while by reason of the publication of Piso's account Brazil had been generally considered the geographical source of the official balsam. However,

the name C. officinalis, Linn., has subsequently been upheld, although the official copaiba balsam is now considered as being mainly derived from C. Langsdorffii, the species named by Desfontaines in 1821 in honor of Mr. Langsdorff, the Rusian consul general at Rio Janeiro, from whom the specimens were obtained. This name was erroneously spelled "Lansdorffii" by Bentley and Trimen (57), who thus perpetuated what was undoubtedly an error of print in Desfontaines' original memoir. Soon thereafter the recorded species of copaiba increased rapidly. In 1826 Hayne (305a) (Arzney-Gewaechse) published and described sixteen different species, which, however, all bear resemblances, their distinctive features residing mainly in the form and the arrangement of the leaves. Hayne especially endeavors to place the species made known by Piso, the difficulty being that this ancient work stated that the wood is colored as if with minium. The only species that, in the opinion of Hayne, would answer that description is C. bijuga, the wood of the branches of which is pale-red, which color may appear as red in the trunk of the tree. Hayne also states that copaiva is gathered from all species known to the natives, and concludes that most of the balsam is yielded by C. multijuga in the province of Para, a species, however, which is now questioned.

According to Flueckiger (239, 240), the following species are the principal sources of the copaiba of commerce:

1. Copaifera officinalis, L. (Guiana, Venezuela, Colombia, Trinidad).

2. Copaifera guianensis, Desf. (Lower Amazon, lower Rio Negro, Cayenne, Surinam).

3. C. coriacea, Martius (Bahia and Piauhy).

4. C. Langsdorffii, Desf. (Continental provinces of Brazil).

The number of known species has steadily increased until now the Index Kewensis recognizes twenty-three American and five African species.

The copaiba obtained from the vast territory of the Brazilian continent, along the Amazon and its tributaries, is collected in the shipping port of Para. Maranhao Island is also a place of export. Other shipping ports are Maracaibo and Angustura in Venezuela, Trinidad, Demerara (British Guiana), Cartagena (Colombia), and Rio de Janeiro.

CORIANDRUM

Coriandrum sativum is indigenous to the regions of the Mediterranean and the Caucasus, from which it has spread throughout the temperate parts of the whole world, even to the Americas. It was mentioned by early Sanscrit writers and in the Mosaic books, Exodus and Numbers, and occurs in the famous Egyptian papyrus Ebers (213). Its fruit was used by the Jews and the Romans as a medicine, as well as a spice, in very early days. Cato (132) notes its cultivation; Pliny (514) states that it was obtained in very fine quality in Egypt, and it is frequently mentioned in the book of Apicius Coelius (24), about the third century A. D. It is also included in the list of valuable products of Charlemagne.

CROTON TIGLIUM

The genus croton, established by Linnæus in 1737, is extensive, 625 species being recognized in the Index Kewensis. We have a number of herbaceous species in this country, but none of any economic importance. The croton plant is a native of India and is grown all through the East Indies. It is a small tree fifteen to twenty feet high.

Croton tiglium is considered indigenous to Malabar, Ceylon, Amboina (of the Molucca Islands), the Philippines, and Java. Joannes Scott (588a), in his dissertation on the medicinal plants of Ceylon (Edinburgh, 1819), states that the seeds of Croton tiglium under the name of "gayapala" are a most powerful purgative, and also that the leaves are very acrid, causing an intolerable burning in the mouth and throat.

Dr. Irvine, in 1848, gave a short account of the materia medica of Patna (part of the province of Bengal) mentioning "jamalgoota," which he stated is derived from croton tiglium and several other species of croton. The croton seeds furnish a violent purge and are made into pills with ginger and "kutkaranja or kath karanja seeds," which he explains are known as bonduc nut (the febrifuge seed of caesalpinia bonducella, or nicker tree).

More recently, Mr. O. Weynton (682) calls attention to the occurrence of croton tiglium in all parts of the fertile and wealthy province of Assam, especially in the dry districts. He states that the demand for the drug is small and that the plant has a tendency to spread. Hence efforts are being made to restrict the growth and keep it within certain bounds.

The ancient Hindu physicians were not acquainted with the drug, which seems to have originated in China, from whence at an early day the seeds were also introduced into Persia (where they are now called *dand*), by way of the caravan routes of Central Asia. Subsequently the Arabs derived their knowledge of the seeds from the Persians, their name, hab-el-kathai (Cathay seeds), being in turn suggestive of the Chinese origin (209). Some of the vernacular Indian names, according to Dymock, seem to indicate that the plant reached India through the Himalayan province of Nepal (209).

The drug was imported into Europe by the Dutch during the sixteenth century. The first account of the croton tiglium plant in European literature, however, must be credited to the Portuguese physician Christoval Acosta, who in 1578 described the wood as lignum pavanæ (or L. panavæ oi L. moluccense), and the seeds as pini nuclei moluccani (3). The prominent writings of Rheede (1678), who gives the Malayan name cadel avanacu (547), Ray (1688) and others subsequently, gave the drug due consideration, while C. Bauhinus (1671) differentiated between several synonyms of the seeds and woods that were then in use. To Caspar Commelyn (1667-1731) is attributed the first use of the name cataputiæ minores for the seeds, while the well-known synonym grana tiglii is also stated to have been originated in his time. And yet this author's work on the Flora Malabarica (1696)

does not record the first term, although the name grana tiglii is therein accredited to Samuel Dale's Pharmacologia, (the first edition of which appeared in 1693) (179).

As regards the use of the oil derived from the seeds, E. von Hirschheydt, in the exhaustive historical introduction to his dissertation (318a), mentions that Peter Borellus, a French physician (1620-1689), in 1657 lauds the cathartic virtues of the oil which in as small an amount as two drops caused purging even when merely rubbed into the skin. Similar mention of its virtues is made by Rumphius (Herbarium Amboinense, 1750). Geoffroy (260) in his Materia Medica (1756) reports that the natives of India use this oil to make what they call the royal purging apple (poma cathartica), the mere odor of which is said to purge persons of delicate constitution. The directions for making this potent "apple" are as follows:

Macerate an orange or lemon in oil of tilli (croton oil) for one month. Remove it, hold to the nostrils and inhale the breath; soon afterwards the bowels will move.

About 1750, Cohausen, according to several authorities, employed the oil with success in cases of tenia.

Although during the seventeenth and eighteenth centuries the remedy had been frequently used, it seems that toward the end of the eighteenth century it fell into oblivion, probably on account of the dangers attending its administration. However, its use was revived when in 1812 several English physicians, among them Drs. White and Marshall, observed the action of the seed in medical practice in India, and brought the drug again to the notice of the profession in Europe (209). Ainslie in 1813, and Conwell in 1819, by their publications gave it further prominence. In connection with its reintroduction we note the interesting fact that a Mr. Short then brought the drug to Europe and was so fortunate as to secure the right (license) to its exclusive sale in England. That it at once became an important drug is shown by the attention then given it in medical literature. An extensive list of references to the literature on croton tiglium covering the period from 1820 to 1835 alone, may be found in Hirschheydt's dissertation (318a). According to the latter authority (1890) the seeds and the oil are seldom used in Europe other than in veterinary practice, as he states, on account of the uncontrollable influence exerted by the presence of the powerfully toxic ricin (an albuminoid body) in the oil.

As already stated, the genus croton was established by Linnaeus in 1737, the name being adopted from the Greek synonym for ricinus communis, the seeds of which, as also those of croton tiglium, have a resemblance to a tick (dog-tick, *kroton* in Greek). As to the origin of the term tiglium, some authorities ascribe it to the Moluccan island of Tilho, while others (696) believe it to be derived (by Dale?) from the Greek word *tilos*, meaning diarrhea. The botanical and vernacular synonyms antedating the name given by Linnaeus are numerous and are generally carried by the older botanico-medical works, e. g. by Dale (179), Bauhinus (47) and others. The post-Linnaean synonyms recorded in the Index Kewensis are rarely if ever seen in pharmaceutical print and may well be reproduced. They are as follows:

(1) C. acutus, Thunberg, 1784.
(2) C. jamalgota, Hamilton, 1825.
(3) C. pavana, Hamilton, 1825.
(4) Kurkas tiglium, Rafinesque (Sylva Tellur.), 1838.
(5) Halecus verus, Raf., 1838.
(6) Tiglium officinale, Klotzsch, 1843.
(7) Croton muricatus, Blanco, 1845.
(8) Anisophyllum acutifolium, Bouv., 1860-61.

CUBEBA

Cubebs **(Piper cubeba)** is the berry of a shrub indigenous to Java, Southern Borneo, and Sumatra. Masudi (413) in the tenth century refers to cubebs as a product of Java. Edrisi (221), 1153, mentions the berries as among the imports of Aden. That they were known in Europe as early as the eleventh century is evident from the writings of Constantius Africanus (165), of Salerno, while Abbatissa Hildegarde (316) of Germany mentions them in the thirteenth century, at which time they had become an article of European trade. They were sold in England in 1284, and at that time, or thereabout, were known to European countries generally. The price in 1596 was equal to that of opium or of amber. Cubeb berries were introduced into medicine by the Arabs of the Middle Ages.

CUSSO

The cousso tree **(Hagenia abyssinica)** is native to Abyssinia, where it is generally planted about the villages on the high tablelands, from 3,000 to 8,000 feet above the sea level. Bruce (105) observed its uses, 1768-1773, during his expedition to discover the sources of the Nile, and Willdenow (385), 1799, described it under the name *Hagenia*. Its use as a vermifuge was derived from Abyssinian domestic practice, the decoction being used for this purpose. In early European record an extraordinarily high price was asked for this substance. It was introduced in 1850 by a Frenchman, who demanded in the neighborhood of $9 *per ounce*. This led to its importation in quantities, when the value soon fell to a normal standard.

CYPRIPEDIUM

Lady's slipper **(Cypripedium pubescens)** is found in several varieties throughout the United States, where it is indigenous to rich woods and meadows. It has been valued as a domestic remedy and was once a home favorite in the form of a decoction for nervous conditions of women and children. It was thus utilized by the early settlers as a substitute for valerian, which fact gave it the name *American valerian*. Creeping thus into domestic therapeutic use, it naturally received the care and attention of the "Indian doctors," and came gradually to the attention of the medical profession. To give the references necessary to its American record would cite all the domestic writers on American medicine of the nineteenth century as well as such authorities as King, Wood & Bache, etc.

DIGITALIS

Digitalis purpurea occurs throughout the greater part of Europe, being, however, generally absent from limestone districts. It was used in domestic medicine in early days, and by the Welsh (see note, page 1) as an external medicine. Fuchs (252) and Tragus (650), 1542, pictured the plant, but remarked that it was a violent medicine. Parkinson (492) commended it in 1640, and it was investigated in 1776-9 by Withering (693), through whose efforts it was introduced into licensed medicine. Digitalis was originally employed as a remedy in fevers, in which direction it is no longer used. In 1799, J. Ferriar (233), of Manchester, England, contributed a treatise concerning the medicinal uses of this drug, which was also described by Withering (693), Bosch (89), Moore (450), and other authors of that period. At present it is largely valued for its poisonous action and is by some standardized by its physiological qualities when injected into the veins of lower animals, the United States Government having issued a bulletin on the subject.

The Eclectic uses of Digitalis are based on its kindly influence, instead of its poisonous action, the aim being to avoid heart shock. Consequently the Eclectic Specific Medicine Digitalis has not the physiological poisonous action that bases the old school drug valuation.

ELATERINUM

Elaterium is the dried juice of the fruit of **Ecballium elaterium,** common throughout the Mediterranean regions, from Portugal to Southern Russia and Persia, as well as through Central Europe. The method of preparing elaterium, as described by Dioscorides (194), is practically that of the present day. The drug is also mentioned by Theophrastus (633). Elaterium is a powerful hydragogue cathartic, parallelling Croton tiglium in its vicious action, and has been empirically known from the earliest times to the natives of the countries it inhabits. Clutterbuck (154), (1819, London Medical Repository, xii, p. 1-9) recommends a process of obtaining elaterium in irregular cake-like fragments, which is now the form in which it is employed in medicine, hence the common term "Clutterbuck's elaterium."

ERGOTA

This drug, from the earliest period, has been known as a disturber of flour, it having been long since observed that flour made of rye containing ergot gave rise to the disease now known as ergotism. When we consider that many of the malignant epidemics and frightful pestilences recorded in the history of mediæval Europe, including an epidemic occurring as late as 1816, were ascribed to spurred rye, it can be seen that such old terms as "convulsivus malignus" and "morbus spasmodicus," once applied to the ergot disease, were well chosen. Not till 1838, however, was the nature of ergot authoritatively determined by Quekett (529) in his paper read before the Linnæan Society,

titled "Observations on the Anatomical and Physiological Nature of Ergot in Certain Grasses." Before that date, although recognized as a fungus, the stage known as ergot was considered a distinct species.

As with all natural drugs, so with ergot. It is a gift of domestic medicine, and was first mentioned by Adam Lonicer (394), Frankfort, Germany, who (1565) ascribed to it obstetric virtues, on the authority of women who considered it of "remarkable and certain efficacy." The English botanist Ray (536) alludes (1693) to its medicinal properties; a Dutch physician, Rathlaw, employed it in 1747; Desgranges, of Lyons (189b), praised it in 1777; while Dr. John Stearns* (611a), of Waterford, N. Y., 1807, under the name "Pulvis parturiens," highly commended it in a paper contributed to the Medical Repository, which gave ergot the American introduction that, supported by other authorities, pushed the drug into prominence. Ergot is a gift of home obstetric practice established over three centuries ago by the German midwives. (See Lloyd Brothers' Drug Treatise No. XII on Ergot.)

EUCALYPTUS

Eucalyptus globulus, and other species of eucalyptus, are indigenous to Australia, where the leaves are employed by the natives as a remedy for intermittent fever. It was thus introduced to Europeans towards the middle of the nineteenth century. Possibly its employment by the crew of the ship *La Favorite,* who in the vicinity of Botany Bay were nearly decimated by fever, from which they recovered through the use of an infusion of the leaves of eucalyptus, first gave the drug conspicuity, through the efforts of Dr. Eydoux and M. de Salvy. Dr. Ramel, of Valencia, however, has the credit of introducing the remedy to the Academy of Medicine, 1866, thus bringing the drug to the attention of the medical profession, by whom it is now used in extract form, in other directions than that for which it was originally commended. The distilled oil of eucalyptus has now an extended reputation and use. The date of its first use by the natives of Australia is unknown.

EUONYMUS

Euonymus atropurpureus and **Euonymus americanus** are probably collected indiscriminately, both varieties being known by the common name *Wahoo.* The bark of the root is the part used. This remedy, in the form of a decoction, was once a favorite in domestic medication, and was introduced from thence to the regular medical profession, as were other American remedies of like nature. It occupied

*Dr. John Stearns, the man who introduced Ergot to American practice, was born in Wilbraham, Massachusetts, May 16, 1770. He graduated from Yale in 1789, studying medicine with Dr. Erastus Sargeant, of Stockbridge, until 1792. He then attended the University of Pennsylvania, but probably did not graduate, as in 1793 he began to practice medicine near Waterford, New York, marrying in 1797 the daughter of Col. Hezekiah Ketchum. He became enthusiastic in behalf of medical societies, and was a leading spirit in the passing of the New York Medical Law, 1806. When the Medical Society of the State of New York was established, Stearns, being a leading spirit, was elected Secretary, filling the position for several years. In 1812 the regents of the University at Albany (where he then resided) conferred on him the honorary degree of Doctor of Medicine. He was elected President of the Medical Society of New York four times successively, 1817, 1818, 1819, and 1820. In 1819 Dr. Stearns moved to New York City, where in 1846 he was a leading spirit in organizing the New York Academy of Medicine, being elected the first President. He died of blood poisoning, the result of a wound, March 18, 1848.

a place in all the early domestic works on medicine, and seems to be alike credited to the American Indians and the early settlers. In Eclectic medication wahoo has been a favorite since the days of Dr. Beach. Under the names "nine barks" or "seven barks" it has a domestic record transplanted to proprietary remedies that use these titles. The Eclectic "concentration" *euonymin* has been conspicuous in England, but has since fallen into disuse. (See Bulletin of the Lloyd Library. No. XII, *The Eclectic Resins, Resinoids, Oleo-Resins, and Concentrated Principles.*)

EUPATORIUM

Eupatorium perfoliatum, boneset, or thoroughwort, is indigenous to the temperate regions of the Eastern United States, and in the form of an infusion or tea was very popular with the settlers; being found in every well-regulated household. As a bitter tonic its uses became known to the early members of the American medical profession, and was handed therefrom to physicians of the present day. Its American history is probably paralleled by the record of this herb in other countries.

FICUS

The fig tree (**Ficus carica**) is native to Asia Minor and Syria, extending into Africa and Oriental countries, the Mediterranean islands, and elsewhere. It is now cultivated in the temperate countries of the entire world. The fig tree and its leaves are repeatedly mentioned in the Scriptures, where they are symbolical of peace and plenty. Charlemagne, in 812, ordered its cultivation in Central Europe, and in the reign of Henry VIII fig trees still standing in the garden of Lambeth Palace were brought to England, though the fig was unquestionably cultivated in England before that date. The fig has been used from all times as a food and as a confection, and it is repeatedly mentioned in the Arabian Nights. Its tri-lobed leaf is synonymous with primitive religions and has occupied a more or less conspicuous place in symbolic worships from the earliest date.

FOENICULUM

Fennel (**Fœniculum vulgare**) is indigenous from the Caspian Sea to the Greek peninsula and other Mediterranean countries, growing wild over a large part of Southern Europe, especially in the vicinity of the sea. It is also cultivated in favorable localities, as in Saxony, France, and Italy. Charlemagne encouraged its cultivation. Its employment in Northern Europe has been from all time, as is indicated by the fact that Anglo-Saxon domestic medical recipes dating from at least the eleventh century give it a place. The use of the seeds in domestic medication in the form of infusion as well as its employment in bread-making is too well established to need more than a mention.

FRANGULA

Buckthorn, **Rhamnus frangula,** grows in wet places throughout Europe, Siberian Asia, and the Northern African Coast. From a very early date it has been known as a cathartic as well as a coloring agent. A decoction of the bark has been in domestic use both as a dye for cotton, wool, and silk fabrics, and as a cathartic, in which (latter) direction it is very effective. No written professional record antedates its domestic use, and perhaps as a "rheumatic remedy" it has no domestic superior.

GALLA

Oak galls **(Quercus infectoria)** are mentioned by Theophrastus (633) and other ancient writers, and they were prescribed by Alexander Trallianus (11) as a remedy in diarrhea. They are derived from varieties of the oak, Smyrna being one of the export points. In that city we have seen them in large quantities, in process of sorting for exportation. As an astringent, galls have long been employed in decoctions in domestic practice in the countries where they are obtained as excrescences on the oak.

GAMBIR

Gambir (or gambier) **(Ourouparia gambir)** is a shrub native to the countries bordering the Straits of Malucca, being found also in Ceylon and India. The dried juice of an Indian tree (Acacia catechu and Acacia suma) is often confused with gambir, and its extract (catechu or cutch) is only too often substituted therefor. Gambir has been obtained from the Orient from the beginning of historical records, and in those countries, mixed with other substances, seems ever to have been used as an astringent in domestic medicine. Both gambir and catechu, as these products are often called indifferently, have ever been articles of export to China, Arabia, and Persia, but were not brought into Europe until the seventeenth century. They are similarly astringent, and although the U. S. P., 1900 edition, drops the word catechu, it is questionable as to whether in commerce a close distinction is drawn in the product.

GAULTHERIA (THE OIL)

The first record of the therapeutical use of this oil, as is often the case with valuable medicines, is to be found in empirical medicine. The proprietary remedy, very popular about the beginning of this century under the name "Panacea of Swaim," or "Swaim's Panacea," introduced it.

This remedy gave added impetus to our Compound Syrup of Sarsaparilla, having become so popular as to force itself to the attention of the profession. The Sarsaparilla Compound of the name "Sirup or Rob Anti-Syphilitica" was closely associated with Swaim's Panacea and Ellis, 1843, after giving the formula of "Sirup Rob Antisyphilitica"

in his Formulary, p. 67, says: "The above preparation has been asserted, by the New York Medical Society, to be nearly identical with the noted Panacea of Swaim."

That oil of gaultheria was a constituent of Swaim's remedy and that it was brought into conspicuity therein, may also be seen from an analysis of Swaim's Panacea (by Chilton) recorded in the Am. J. Med. Sciences, 1829, p. 542. The following reprint from an anonymous writer in the American Journal of Pharmacy, 1831, establishes the subject more clearly in that it gives a very fair description of oil of gaultheria as well as making a statement to the effect that it is the same as sweet birch oil, and showing further that many different plants yield the same oil.

Oil of *Gaultheria procumbens*:—"This is the heaviest essential oil of which we have any knowledge, for I have found it to be 1.17. This furnishes us with an easy mode of testing its purity. The wonderful success of Swaim's Panacea has brought this oil into great vogue with all venders of Catholicons, Panaceas, and Syrups of Sarsaparilla.

It appears to be a vegetable principle secreted in plants very widely separated by their natural affinities. The *Betula lenta* or Sweet Birch secretes it in its bark; the Polygala paucifolia in its roots; the *Spiræa ulmaria** the *Spiræa lobata* and the *Gaultheria hispidula* in their roots and stalks.

But that oil of wintergreen was used somewhat in domestic medicine about that date, and also by Dr. Wooster Beach, the forerunner of Eclectic medicine, is evidenced, for Dr. Beach in his American Practice of Medicine, Vol. III (1833, p. 201), concerning *Gaultheria "Gaulthera" repens*, states that "The oil relieves the tooth ache."

Antedating this paper, I have not succeeded in finding any reference whatever to oil of gaultheria being used in medicine, although the plants that contain it were generally recognized in pharmacy, the oil being distilled by primitive methods and known to druggists. Thus, as showing that even if used at all it could not have been important I need only to refer to a few of the many authorities who would not have overlooked it.

Amœnitates Academicæ III, p. 14, 1787.

"*Gaultheria*, Kalm. (385) (Gen. 487).—*Usus* foliorum in infuso, loca Theae. *Dixit* plantam Cl. Kalmius a. D. D. Gaulthier, Medico Canadensi, Botanico eximio." No reference to the oil.

Benj. Smith Barton. Collections (43), Etc. Philad., 1798, p. 19.

"The *Gaultheria procumbens*, which we call Mountain Tea, is spread very extensively over the more barren, mountainous part of the United States," etc. Does not mention the oil.

Pharmacopeia of the Mass. Medical Society (503). Boston, 1808.

No mention of the oil or plant.

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* Pagenstecher described oil of *Spiræa ulmaria* in the Repertorium f. d. Pharmacie, 1834, p. 337, and is credited by Procter with its discovery. But we have in this paper a reference that antedates him three years. Still, this anonymous writer is preceded thirteen years by Dr. Jacob Bigelow, as shown in our history.

W. P. C. Barton, Mat. Med. I, p. 171, 1817. (43a)

Although he describes the medicinal virtues of Gaultheria in detail, he does not mention the oil. However, as showing that oil of gaultheria was distilled preceding 1818 I will cite,

Bigelow, Amer. Med. Botany (69), II, p. 28. Boston, 1818.

Pyrola umbellata (p. 15) is herein called Wintergreen.

Gaultheria procumbens (Partridge Berry):—"The aromatic flavor of the Partridge berry, which can not easily be mistaken by those who have once tasted it, may be recognized in a variety of other plants whose botanical habits are very dissimilar.

"It exists very exactly in some of the other species of the same genus, particularly in *Gaultheria hispidula;* also in *Spiræa ulmaria* and the root of *Spiræa lobata.* It is particularly distinct in the bark of sweet birch, *Betula lenta,* one of our most useful and interesting trees.

"This taste and odor reside in a volatile oil, which is easily separated by distillation. The essential oil of Gaultheria, which is often kept in our druggists' shops, is of a pale or greenish-white color, and perfectly transparent. It is one of the heaviest of the volatile oils, and sinks rapidly in water, if a sufficient quantity be added to overcome the repulsion of the two heterogeneous fluids. Its taste is aromatic, sweet, and highly pungent.

"The oil appears to contain the chief medicinal virtue of the plant, since I know of no case in which the leaves, deprived of their aroma, have been employed for any purpose. They are nevertheless considerably astringent, etc.

"The leaves, the essence, and the oil of this plant are kept for use in the apothecaries' shops.

"The oil, though somewhat less pungent than those of peppermint and origanum, is employed for the same purposes," etc.

In this connection, as indicating that the oil was unimportant, perhaps simply an article of curiosity to pharmacists, it may be pointed out that the *American Dispensatory* of J. R. Coxe, 1825, mentions oil of gaultheria, but does not say anything with regard to its value or use in medicine.

The edition of 1818 does not mention the plant or oil at all.

In studying the pharmacopeial record of this oil, in connection with its materia medica and dispensatory history the fact becomes apparent that: oil of gaultheria was made in a primitive way by country people (as is still largely the case) about the beginning of this century.

It was introduced into the list of known essential oil-bearing plants of America in the first (1820) Pharmacopeia, but was not described. Following this, such works as the American Dispensatories and American Materia Medicas gave the oil a complimentary position, but it was of no importance until brought forward by the analysis of Swaim's Panacea. Not until long after 1820 did any European dispensatory or pharmacopeia give it position.

Summary: Oil of Gaultheria was distilled for druggists previous to 1820, but no public description of the apparatus or method was printed.

The Pharmacopeia of the United States, 1820, gave the first authoritative method of making it.

It was prominently introduced to the profession by the New York

Medical Society, 1827, under whose auspices the oil was established as a characteristic constituent of Swaim's Panacea, the report being published in 1829.

We know of no pharmacopeial direction for making oil of gaultheria from any source whatever which precedes the first (1820) Pharmacopeia of the United States, and no reference to its being made from gaultheria or sweet birch preceding Bigelow, 1818.

Thus it is evident that while the plant gaultheria has the advantage concerning conspicuity of name, the same date of introduction and same reference (Bigelow) must be ascribed to both oil of gaultheria and birch.

Swaim's Panacea.—The important fact elucidated by the foregoing history of oil of Gaultheria, to-wit, that it first received recognition in this once popular remedy, leads to a few words concerning this compound. In the beginning of the present century a French proprietary remedy "Rob de Laffecteur" was very popular throughout France and her colonies. It was invented by a French apothecary Boiveau, who affixed to it the name of Laffecteur to make it popular. In 1811 certain New York physicians used this "Rob de Laffecteur" with success and Dr. McNevin, who obtained the formula from a French chemist, M. Allion, made its composition public.

Mr. Swaim, a bookbinder, was treated by Dr. A. L. Quackinboss and experienced great benefit from the remedy. Procuring the formula from Dr. Quackinboss, his physician, he modified it considerably and put the mixture on the market under the name Swaim's Panacea. This became very popular and at last attracted the attention of the medical profession, and by the analysis of Mr. Chilton (1829), under the auspices of the New York Medical Society, it was positively shown that Swaim had replaced the sassafras of Quackinboss' formula by wintergreen oil and had also introduced corrosive sublimate into the mixture.

Persons interested in this formula and subject will find detail reports as follows:

American Journal of Pharmacy, 1827, p. 123.
American Journal of the Medical Sciences, 1829, 4, p. 530.
American Journal of the Medical Sciences, 1829, 5, p. 542.

GELSEMIUM

Common Names.—Yellow jessamine, jessamine, Carolina jessamine, wild woodbine, white poison-vine, white jessamine.

Gelsemium sempervirens is a native of the Southern United States, being abundant in the swamps, woods, and thickets, from Virginia to Florida. It is a handsome climber, twenty to fifty feet in length, blooming in early spring, its flowers being overpoweringly fragrant. The name, given by Jussieu, was made from the Italian word *gelsomino*, meaning jasmine. But it is not a jessamine, and inasmuch as there is a true jessamine with *yellow* flowers, E. M. Holmes, of London, considers it unfortunate that the term *yellow jessamine* has been applied to it. This common name, however, is now firmly es-

tablished. Its Italian name, *gelsomino*, possibly led Eclectic authors to use the name gelsemi*num* instead of gelsemi*um*, a term found in early Eclectic literature and but recently displaced. In this connection it may be said that Professor Scudder invariably used the word *gelseminum.**

Medical History.—Barton and his co-laborers did not mention gelsemium, but Rafinesque (535), 1830, gave it a place, stating that "root and flowers† are narcotic, their effluvia may cause stupor, tincture of the root is used for rheumatism in frictions," a statement taken almost literally from Elliott's (227) *Botany of South Carolina and Georgia*, 1821. The medical record (*King*) (356) had its origin through the mistake of a servant of a Southern planter who was afflicted with fever. This servant by error gave his master a decoction of gelsemium root instead of the garden plant intended. Immediate loss of muscular power and great depression followed, all control of the limbs was lost, the eyelids drooped and could not be voluntarily opened. Death seemed imminent. But the effects finally wore away and the man recovered, free from fever, which did not recur. An observing physician took this experience as a text and prepared from gelsemium a remedy which he called the "Electrical febrifuge," which attained some popularity. Finally the name of the drug concerned was given to the profession. This statement is found in the first edition of King's *American Eclectic Dispensatory*, 1852, which work actually presented gelsemium to the world of medicine, although, as will be shown later, the plant had a recorded position much earlier. King's article on gelsemium was copied in substance by the *United States Dispensatory*, 1854, none of the preceding nine editions of that work having mentioned the drug. But the fact is that Porcher (520) commended gelsemium in his report to the American Medical Association, 1849, and, concerning its restricted local use in gonorrhea and rheumatism, referred to Frost's *Elements of Materia Medica* (250) (South Carolina) as well as to several local journal articles.

For a long time following 1852 (at which date King's *American Dispensatory* appeared) gelsemium remained an almost exclusive remedy of the Eclectic school, but in 1860 it attained a position in the United States Pharmacopeia, although not until 1880 did that work give place to any preparation of gelsemium. At present the drug is in much favor with many physicians of all schools, but is generally classed as one of the Eclectic remedies, being one of the most important in Eclectic therapy.

GENTIANA

Gentian (**Gentiana lutea**) is indigenous to the mountainous parts of Middle and Southern Europe, being found in the Pyrenees, the Islands of Sardinia and Corsica, the Alps, and elsewhere. It is not, however, found in the British Islands. It is mentioned by both Pliny

* In an English botanical work in the Lloyd Library, which I can not now locate, a long discussion appeared concerning the two words. If memory serves me correctly, the decision was in favor of *Gelseminum*.—J. U. L.

† The statement has been made and possibly established that honey from the flowers of this plant is narcotic.

(514) and Dioscorides (194), its name being derived from Gentius, a king of Illyria, B. C. 180. Throughout the Middle Ages gentian was used as a domestic medicine and to antidote poisons, and in recent times it has been commended as an antidote or substitute for tobacco. Tragus (650) employed the root A. D. 1552 for the purpose of dilating wounds.

GERANIUM

Cranesbill, **Geranium maculatum,** is found native to the lowlands and open woods throughout the temperate Eastern United States. Being one of the astringent domestic remedies used in the form of infusion or decoction in diarrhea, dysentery, sore mouth, and similar diseases, it thus came to the attention of physicians, whose use of it finally led to its place in the pharmacopeia. In Eclectic medication geranium is much valued, the drug occupying a well-established position in all the publications of that school of physicians.

GLYCYRRHIZA

Licorice, the dried rhizome and root of **glycyrrhiza,** is mentioned by Oribasius (479a) and Marcellus (404) in the fourth century, and by Paulus Ægineta (494) in the seventh. It was known in the time of Dioscorides (194), and was commonly known in Europe during the Middle Ages. Its price in England, in the day of Henry III, was equal to that of grains of paradise. It was one of the articles paying duty to aid in the repairing of London Bridge in the day of Edward I, 1305. Saladinus (570), in the fifteenth century, mentioned it as an Italian medicine, and it was commonly known in the city of Frankfort in 1450. Mattioli (414), 1574, states that the juice, in the form of pastilles, was brought every year from Apulia. Indeed, the record of this substance is to the effect that it has been an article of domestic use, as a "sweet wood" for chewing, as a constituent of medicinal pastes, and in the form of a common water extract, since the earliest times. It is found in large quantities in the localities where it is cultivated, in Sicily, Italy, and Spain, while in moderately recent years we have seen immense amounts of licorice roots annually collected in the valleys of the Hermes and the Kayster, where probably it has grown wild from all times.

GOSSYPII CORTEX

Cotton Root Bark, **Gossypii radicis cortex,** is used as a stimulant and emmenagogue, the decoction being considered, in the days of American slavery, capable of producing abortion. It was thus introduced empirically by the Negroes, and came from thence into the hands of the profession, being first employed by physicians of the Southern United States. Following this introduction, Wallace Brothers, of Statesville, S. C., at the request of the writer (*Eclectic Medical Journal,* February, 1876, p. 70), forwarded to him a barrel of fresh cotton root bark, preserved in alcohol. This was made into a fluid extract, and distributed to American practicing physicians, with a request that the

results of its use be reported in contrast with the dried bark deemed by some to be inert. A summary of more than forty reports from practicing physicians, together with remarks concerning the preparation of gossypium employed, was read before the Twenty-fourth Annual Meeting of the American Pharmaceutical Association, 1876. The paper, in full, titled, "Fluid Extract of Gossypium Herbaceum," was published in the *Eclectic Medical Journal,* December, 1876, pp. 537-547. This treatise, together with the increasing demand from physicians throughout America for pharmaceutical preparations of gossypium root bark, led to its introduction to the Pharmacopeia of the United States. The credit for the discovery of its uses, as before stated, must be given to the Negroes of the South.

GRANATUM (POMEGRANATE)

Punica granatum has been in cultivation from the earliest historical times. It is now found in all warm countries of the world, and frequently as an ornamental plant in this country and abroad, where it requires protection during the winter season, as it will not endure the cold. It is recorded, e. g., that in 1838 the pomegranate trees in the neighborhood of London were killed by the frost. The form generally grown as ornament is the double variety, and consequently barren. The fruit of the pomegranate has been esteemed a delicacy from the most ancient time, and we often see it offered for sale at our fruit stands. In the West Indies, where the plant would thrive naturally, it is not extensively cultivated, and the writer of this botanical history (C. G. Lloyd), who has visited all these islands, does not remember to have seen it or its fruit there. Like all cultivated plants, it is liable to variation, and several of its forms have been considered distinct species and named by several authors; however, they are all now considered forms of one species.

The pomegranate shrub, according to De Candolle (122), is originally a native of Persia and adjacent countries, but has been cultivated and naturalized in the Mediterranean countries at such an early date that it has even been considered indigenous to these countries.

Pomegranate was included among the vegetables that were held sacred by the Assyrians (86) and the Egyptians (688); the latter nation made it a custom to place in the graves of the dead fruits of the field and garden, among them pomegranates, specimens of which are preserved to the present day (239). The pomegranate had undoubtedly an occult significance with the ancient nations. It was frequently used as a mystical emblem in adorning the capitals of Assyrian (86, 374) and Egyptian (688) columns, and the Bible (1st Book of Kings vii, 18, 20) tells us that in the building of Solomon's temple the capitals of the columns were decorated with a "network of pomegranates." Also (Exodus xxviii, 33, 34) the hem of the high priest's robe was adorned with imitations of pomegranates in blue, purple, and scarlet, alternating with bells of gold. The pomegranate was one of the three fruits brought to Moses by the men that he sent to spy out the land of promise (302). Many other passages scattered throughout the

Bible refer to our plant (483), and testify to the esteem in which the tree and the fruit (then called rimmon) were held in ancient times. The fruit and seed of the pomegranate are often mentioned in the "Arabian Nights."

Pomegranates were represented on Carthaginian and Phenician medals (422) and on the reverse of the coins of the Island of Rhodes (688). In Greek mythology the pomegranate is very conspicuous (307, 191, 241), and symbolizes fecundity and abundance. The fruit was dedicated to Juno, a deity always represented in sculptures as holding a pomegranate (191).

The Greek authors, e. g., Theophrastus (633), describe the pomegranate under the names of "roa" and "roa side;" also Dioscorides (194), who quite explicitly sets forth the medicinal properties of the different parts of the plant. Among Roman authors who describe the pomegranate and its uses are Cato Censorius (132), Pliny (514), Celsus (136), and others. Subsequent writers, for example the Arabians, in the ninth century, also refer to the pomegranate, but seem to have mainly reiterated the substance of the writings of their Greek and Roman predecessors (422). The "Arabian Nights" (88) speaks of the use of the seed cooked as follows: "Every day I cook five dishes for dinner, and the like for supper; and yesterday they sought of me a sixth dish, *yellow rice,* and a seventh, a mess of *cooked pomegranate seed.*" (Adventures of Mercury Ali of Cairo, Vol. vii, p. 185.) Of the writers of the Middle Ages may be mentioned Tragus (650) and J. Bauhinus (47), the latter giving a most detailed compilation of that which was known before his time on the subject of the pomegranate, including the myths with which it is connected. It was not until the present century, however, that the literature of the pomegranate was enriched by the study of its chemical aspects.

GRINDELIA

Grindelia, robusta, a California plant, is, as found in commerce, of questionable authenticity, owing to the near relationship of very similar species of grindelia. It early attracted the attention of the Jesuit Fathers in their mission stations along the coast, it being used by the natives before the conquest of the country by the Americans. Dr. C. A. Canfield, of Monterey, Cal., about 1863, called attention to grindelia as a remedy in the poison of rhus toxicodendron, its native use in that direction having become known to him. Mr. James G. Steele, of San Francisco, 1875, contributed a paper to the American Pharmaceutical Association commending its use in this direction. After that time the drug rapidly crept into favor with the profession of medicine.

GUAIACUM

Guaiacum is a low evergreen tree, native to the West Indies and Southern Florida. Its earliest importation into Europe was from San Domingo, as recorded by Oviedo (487). A. D. 1526; but that it was known in Germany previous to that date is proved by treatises by

Nicolaus Poll (517), 1517; Leonard Schmaus (578), 1516; and Ulrich von Hutten (332), 1518, by whom it is given a place. Oviedo (487), who landed in America in 1514, observed the tree, which was called by the natives *Guayacan.* This drug, and its resin as well, was used empirically in domestic (native) medicine before its introduction to the profession.

Resin of Guaiacum is a product obtained from slow combustion, wherein, by a crude method, a horizontal guaiacum log, raised from the ground, is slowly burned, the resin collecting in grooves that are cut in the logs. It is used more extensively than is the wood.

GUARANA

Guarana, a dried paste from the crushed seeds of *Paullinia cupana,* was introduced into France from South America by a French officer in 1817, as a product of an unknown plant, this paste being made and used by the tribe of Indians (Guaranis) from whom it took its name. In 1826 Martius (409) identified the plant, which is called *Paullinia sorbilis* in deference to Simon Paulli (493). In 1840, (Am. Journ. Pharm., pp. 206-208), Dr. Gavrelle presented a specimen of guarana to the Paris Society of Medicine, the same being analyzed by M. de Chastetus, who discovered "a crystallizable matter, which possessed the chemical properties of caffeine." In 1888 Professor H. H. Rusby (564) (Amer. Jour. of Pharm., p. 267) authoritatively described the manner in which the natives prepared Guarana from the seed, and in their crude way produced the smoked sausage-like rolls familiar in commerce. The date of its discovery by the Indian tribes whose preparation and use of the substance as "a stimulating substance" led to its European notice, is lost to record.

HÆMATOXYLON

Logwood (**Hematoxylon campechianum, L.**) is the wood of a tree used throughout the civilized world as a dye stuff, in which direction we find it is most largely consumed. The tree is native to Central America, being abundant in Campeachy, Honduras, and other sections of that country. Flückiger (239) accepts that the wood was introduced into England in the latter half of the sixteenth century, because in 1581 its use was abolished by act of Parliament, for the reason that it was considered a poor substitute for better dyes, and was viewed in the light of a sophisticant. Eighty years later, probably because a better study of the drug had rendered its use practicable, logwood was again permitted to enter England. According to De Laet (368), 1633, one of the names by which it was commonly known, *peachwood,* was derived from the town of Campeachy, whence the wood was exported in quantities to Europe. The accounts of travelers and sailors at the time of the great excitement produced by the discovery of the abundant sources of wealth in the new world, almost universally mentioned logwood. This is evident from the record found in such narratives as appear in sailors' descriptions of their voyages, in *Chambers Miscellany,* and elsewhere.

In the form of a decoction of its chips, logwood has been a favorite in domestic medicine, and owing to its mild astringency it has been used for a considerable time by licensed physicians. In 1746, under the name of *Lignum tinctile Campechense*, it became official in the *London Pharmacopoeia*.

HAMAMELIDIS CORTEX ET FOLIA

Witch-hazel, **Hamamelis virginiana.** The decoction and infusion of the bark as well as of the leaves of this shrub have been in common use from the days of the American Indian, whose use of the plant led the settlers to its employment. They also used the leaves as well as the pounded bark in the making of a poultice for topical use in inflammations. These domestic uses of the drug led to its introduction by the medical profession at an early date. A mixture of hydrastis root and hamamelis leaves was held in high repute by Professor John King, M. D. (356), as a wash and as an injection. The preparation known as distilled hamamelis, or distilled extract of hamamelis, introduced by Pond about the middle of the nineteenth century, became very popular and has an increasing demand at the present time, a substitute or imitation being introduced into the pharmacopœia under the title "hamamelis water."

HEDEOMA

American pennyroyal, **Hedeoma pulegioides,** is a fragrant herb, native to America, and generally distributed throughout the temperate portions of North America. It was used by the Indians in the form of decoctions and infusions, and was introduced by them to the settlers, coming thence to the attention of the medical profession. Its chief use at the present time is in the making of the volatile oil distilled therefrom. This plant must not be confused with the pennyroyal of Europe, a small, aromatic herb, *Mentha pulegium*, common throughout Europe, extending northward to Sweden, eastward to Asia Minor and Persia, and southward to Abyssinia and Arabia. The European pennyroyal, also a common domestic remedy, has fallen into therapeutic neglect by the profession.

HUMULUS

Hops (**Humulus lupulus**) is a climbing vine found in thickets and along river banks throughout Europe, and extending to and beyond the Caucasus and Caspian regions. Introduced into America, hops have become acclimated, and especially in the Northwest are cultivated in immense quantity. Hop gardens existed in France and Germany in the eighth and ninth centuries, and "Bavarian hops" were esteemed in the eleventh century. It has been asserted that William the Conqueror, 1069, granted the use of land for hops in England. The original use of hops was in decoction as a stomachic medicine, whilst their employment in the making of malted liquors is familiar to all. As a tonic, the hop is still valued in simple decoction and in extract, both by the people and the profession of medicine.

HYDRASTIS

Hydrastis canadensis is native to North America. Once abundant in the thick woodlands of the Central West, in the territory bordering the Ohio River from Illinois to Virginia, it is now in its native home practically exterminated. Hydrastis is known by the common names, golden seal, yellow puccoon, yellow root, and other similar expressive appellations signifying its color or applying to its nature. The root of this plant, of a rich golden yellow, like its companion, sanguinaria, which, however, has a red color, was used by the Indians as a cuticle stain, and also as a dye for their garments. Being exceedingly bitter, it was also useful in repelling insects, when mixed with grease and smeared upon the skin, and hence served a double purpose in the use of primitive man. Its first printed conspicuity came from a paper read by Mr. Hugh Martin (408) before the American Philosophical Society, 1782, published in their Transactions, 1793, under the title, "An account of some of the principal Dyes employed by the North American Indians." By reason of its red berry, hydrastis was also called *ground raspberry*. Although it had been mentioned in various medical publications, the drug was held in slight repute, and was of no commercial importance until the advent of the American Eclectics, who first prepared its alkaloidal salts for professional use (388a). Its medical history dates from its use by the Indians, who introduced it as a native remedy to the earliest botanical explorers, and to settlers. Its therapeutic qualities were overlooked, however, by Kalm (350), 1772; Cutler (178), 1783; and Schoepf (582), 1785; Barton (43) first bringing it before the medical profession, 1798. He credits the Cherokee Indians for its ascribed uses, and in the third part of his work (1804) he devotes considerable attention to the drug. Rafinesque (535) (1828) states that the Indians employed it as a stimulant, and that the Cherokees used it for cancer, in which direction better remedies were to them known. The principal use of hydrastis by the Indians, however, and which afterwards crept into domestic practice, was as an infusion or wash for skin diseases and for sore or inflamed eyes. It was also employed as a stimulant for indolent ulcers, and as an internal tonic. Hydrastis may be considered typical of the drugs that are employed very extensively by the medical profession, through their empirical introduction, it being recorded that even for gonorrhea the Indians discovered its utility.

Early authorities on American medical plants, such as Barton (43) (1798 and 1804), Hand (298) (*House Surgeon*, 1820), Rafinesque (535), Elisha Smith (601) (1830), Kost (361) (1851), Sanborn (571) (1835), give to hydrastis considerable conspicuity, whilst Dunglison's Medical Dictionary (203) pessimistically (1852) states that in Kentucky only it is used, and then only as an outward application, for wounds. (See *Drugs and Medicines of North America*, pp. 154-5 [389].)

HYOSCYAMUS

Hyoscyamus niger is distributed throughout Europe, from Portugal and Greece to Norway and Finland. It is found in the

Caucasus, Persia, throughout Asia Minor, Northern India, and even in Siberia. It has been naturalized in North America and Brazil, and in England is a common weed. Dioscorides (194) mentions it among medicinal plants, and under the name *Henbane* it has been employed in domestic medicine throughout Europe from the remotest times. Anglo-Saxon works on medicine in the eleventh century give it a place. During the Middle Ages the seeds and roots were much used. Its re-employment and introduction to modern regular medicine, after it had fallen into disuse, came through the efforts of Störck (617). Its qualities were well known to the Arabians, as is witnessed in numerous references thereto in the "Arabian Nights" (88), of which the following is a sample:

"Presently he filled a cresset with firewood, on which he strewed powdered *henbane,* and lighting it, went round about the tent with it till the smoke entered the nostrils of the guards, and they all fell asleep, drowned by the drug." (88) History of Gharib and his Brother Ajib, Vol. VII, p. 7.

Had Herodotus not said *tree,* it might have been accepted that the volatile intoxicant mentioned by him referred to this drug. Indeed, the presumption would not have disturbed an author who made errors more pronounced than the distinction between an herb and a tree, and who qualified his statement by "it is said." However, as shown in our article on *Matico,* that plant was originally described as "Soldier's Herb or Tree."

"Moreover it is said that other trees have been discovered by them which yield fruit of such a kind that when they have assembled together in companies in the same place and lighted a fire, they sit round in a circle and throw some of it into the fire, and they smell the fruit which is thrown on, as it burns, and are intoxicated by the scent as the Hellenes are with wine, and when more of the fruit is thrown on they become more intoxicated, until at last they rise up to dance and begin to sing." Herodotus (Macaulay), Book I, p. 99.

In this connection, through tradition probably, its uses in the same manner came to popular uses. The grandmother of the writer, afflicted with asthma, found her greatest relief in smoking stramonium leaves mixed with small amounts of henbane leaves. This was an heirloom of primitive medication transplanted to the Western American wilderness.

IPECACUANHA

The beginning of the history of ipecacuanha root and the first study of its virtues is clouded in mystery and fable. It is stated that the South American Indians were acquainted with the medicinal properties of the plant, having gained their experience from observing the habits of animals (409).* A vague yet probably the first source of information on the subject of ipecacuanha root is found in a work published in London in 1625, named "The Pilgrimes," by Samuel Purchas (527), which in five volumes gives an account of many travels and the natural history of foreign countries. In Vol. IV, page 1311,

*This fable has a parallel in the quaint description given by Clusius concerning the discovery of the healing virtues of nux vomica bark in cases of snake bite.

where Brazilian plants and their uses are considered, the following passage occurs:

"*Igpecaya* or *pigaya* is profitable for the bloudie fluxe. The stalke is a quarter long and the roots of another or more, it hath only four or five leaves, it smelleth much wheresoever it is, but the smell is strong and terrible."

The subsequent description of its medicinal virtues bears further evidence that we have here a plant at least closely related to official ipecacuanha. According to a printed note at the head of that chapter, the author is believed to be a Jesuit by the name of Manoel Tristaon (651a), who probably wrote the treatise in the year 1601.

The first definite information we have of ipecacuanha dates from the publication of a work by Piso and Marcgraf (511), called "Historia Naturalis Brasiliæ," Amsterdam, 1648, chapter lxiv being entitled "De Ipecacuanha ejusque Facultatibus." Two species are described, a white and a brown species, the latter evidently being the true ipecacuanha plant. An illustration of the plant is added, which Mérat considers quite a creditable reproduction of the true ipecacuanha. The entire chapter was reprinted, with French translation, by Mérat (422), and inserted in his "Dictionnaire," as a testimony of the extreme exactness of the description given by Piso (511).

The root first came to Europe in 1672 through the agency of Le Gras (422), who sought to introduce it into medical practice. Keeping a stock supply in the care of an apothecary by the name of Claquenelle in Paris, he associated himself with J. A. Helvetius (309), a physician of German descent, who had graduated under the medical Faculty at Reims. However, the venture was at first a failure, owing to the employment of too large doses.

In 1680 a merchant by the name of Garnier in Paris, well acquainted with the medicinal virtues of the root, sent for a supply, obtaining 150 pounds from Spain. Through this gentleman, directly or indirectly, Helvetius (309) secured a new lot of the drug, which he skillfully managed to exploit by extensively advertising it as "radix anti-dysenterica," the origin of which, however, he kept a secret. Finally the fame of the remedy came to the notice of Minister Colbert, who ordered that the remedy be given an official trial in the Paris municipal hospital.

In 1688 Helvetius (309) obtained the sole license for the sale of the drug, which proved to be an efficient, or at least popular, remedy among the members of an aristocratic patronage, including no less a personage than the dauphin. King Louis the XIV then bought the secret from Helvetius for one thousand louis d'or, and made the remedy public property. He was induced to do so by the combined influences of his physician, Ant. d'Aquin, and of Franç. de Lachaise, confessor to the king. Garnier, the merchant, however, brought suit in order to obtain his share of profit in the transaction, but was unsuccessful in his efforts.

After the use of the drug had thus been established in France, the remedy was introduced into other countries, e. g., by Leibnitz (378a)

(1696) and Valentini (656b) (1698) into Germany, and 1694 by Fried. Dekker into Holland.

During the first part of the eighteenth century the drug was in frequent use in the various pharmacies of Germany, as is evidenced from its being mentioned in several old documents of that age. It is, for example, mentioned in the authoritative drug list of the Silesian town of Strehlen in 1724.

However, during the increasing employment of the drug, in the latter part of the eighteenth century, much confusion arose as to its botanical origin, insomuch that it became the habit to designate as ipecacuanha any emetic plant, regardless of its botanical source. A long list of such plants is enumerated, for example, in Martius (409). In this manner the characteristics of the plant furnishing true ipecacuanha root became almost forgotten, other plants being substituted for it. Ray, for example, held it to be a species of *paris*, and no less an authority than Linnæus himself thought *viola ipecacuanha* now known as *ionidium ipecacuanha* (684), to be the true ipecacuanha root.

In 1764, Mutis, a celebrated botanist in Santa Fe de Bogota, sent the younger Linnæus a Peruvian emetic plant with description, which he thought was the true ipecacuanha root. Linnæus fil. (385) accepted the statement of Mutis as correct and, moreover, believing the illustration given by Piso (511) of the true ipecacuanha plant to represent the specimen he received from Mutis, in 1871 gave it the name ***psychotria emetica,*** **Mutis.**

To Dr. Gomez (*271, 272*), who in 1800 returned from Brazil, is finally due the credit of having corrected this error. He re-established the nearly forgotten botanical character of true ipecacuanha in his memoir published at Lisbon in 1801, wherein he describes and figures the plant, and especially distinguishes it from Psychotria emetica, Mutis.

Having donated some specimens of the plant in his possession to his fellow countryman, F. A. Brotero (100), professor of botany, Coimbra, the latter published an account of it (1802) in the Trans. Linn. Soc., naming it *Callicocca ipecacuanha* (100), but without giving credit to the source of his information, which chagrined Gomez considerably (422). Twelve years later Brotero left a copy of his article with a botanist by the name of Hectot, of Nantes, who communicated it to M. Tussac (656a), and the latter, in publishing it, gave it the name *Cephaelis ipecacuanha*, also laying stress upon its distinction from *Psychotria emetica*, Mutis, perhaps without having had any knowledge of Gomez's paper written twelve years before.

In 1820 A. Richard (550) again called attention to this distinction, but, as it seems, also without giving proper credit to Gomez, with the result that later authorities frequently quote the true ipecacuanha root under the name of Cephaelis ipecacuanha, A. Richard.

JALAPA

The purgative tuber known under the common name jalap, **Exogonium purga,** is a gift of Mexico, and by reason of its cathartic

qualities naturally became a favorite in Europe in the days of heroic medication. The early Spanish voyagers learned of its qualities from the natives, and in the sixteenth century carried large quantities to Europe. Monardes (447), in 1565, mentions a cathartic under the name Mechoacan rhubarb, or root, which some believe to have been jalap, but this Flückiger (239) discredits, because Colon, an apothecary of Lyons, in 1619, states that jalap was then newly brought to France. Flückiger also accepts that both drugs were well known in 1610, although often confused. Owing to this confusion between the two bulbs, one was called *black mechoacan,* while the other was known as *white jalap.* Strangely enough, the exact botanical source of jalap remained a question until 1829, when Dr. Coxe, of Philadelphia, author of *Coxe's American Dispensatory,* identified the drug from living plants sent to him from Mexico, and published descriptions, with colored plates, in the *American Journal of Medical Sciences,* 1829. This celebrated cathartic, so much used by licensed physicians and in domestic medication, is to be credited to the natives of Central America, whose employment of the drug introduced it to European commercial adventurers who, as a matter of business, made it known to the professions of medicine and pharmacy.

KINO

Kino is the dried juice of a handsome timber tree, **Pterocarpus marsupium,** a native of the southern parts of the Indian Peninsula and Ceylon. It is also obtained from several other trees which partake of the qualities of an astringent drug. One of these, *Pterocarpus indicus*, is a tree of Southern India, the Malay Peninsula, and the Philippine Islands. The drug, used by natives from time immemorial, was introduced into commerce by Fothergill (244), 1757. It came from the River Gambia, in Western Africa, where it had been previously noticed by Moore (449), who in his "Travels Into the Inland Parts of Africa," 1737, mentioned the product under the name *kano.* Mungo Park, 1805, sent specimens of the tree to England, and from that date African kino has been a regular product of the English drug market. According to Duncan (202) in the Edinburgh Dispensatory, 1803, kino as found in England was an African product, but he recognizes a variety, indistinguishable from this, coming from Jamaica. In the 1811 edition of the same work he asserts that the African drug is out of market, and that the East India Company now supply the market from Jamaica and New South Wales. It is evident that, as with Krameria, many species and varieties of the tree, native to widely different sections of the world, produce the substance known as kino, which, aside from the East India tree, *Pterocarpus marsupium,* are accepted as being very nearly identical with the material yielded by the kino tree of tropical Africa. Kino is obtained by incising the tree and removing the red jelly as it exudes, then drying it by exposure to the air. It is mildly astringent, and has been used in the manufacture of wine.

KRAMERIA

The shrub **Krameria triandra** is native to the bare and sandy slopes of the Bolivian and Peruvian Cordilleras, growing at from 3,000 to 8,000 feet above sea level. It is often found in great abundance, standing in solid beds scarcely a foot high, and peculiarly attractive by reason of its silver-gray foliage and starlike flowers. The root of commerce comes from the north and east of Lima, and the northern part of Peru. The Spanish botanist Hipolito Ruiz (562, 563), in 1784, observed the native women of Huanuco and Lima using this drug as a tooth preservative and an astringent. On his return to Europe, in 1796, he introduced the root into Spain, and from that country it gradually spread throughout Europe. The first that reached England, however, was as part of the cargo of a Spanish prize, a part of which came into the hands of Dr. Reece (540), who recommended it to the profession, 1806, in his Medicinal and Chirurgical Review, London. There are other species and kinds of rhatany, one being investigated by the writer of this article some years ago, as found in Florida, the qualities of which could scarcely be distinguished from those of the astringent South American drug. This drug was also noticed by Dr. E. M. Hall, of Chicago, a well-known Homœopathic author. Seemingly the species of rhatany are all of similar nature and are dependent upon a kindly, astringent, red tannate.

LACTUCARIUM

Several species of **lactuca,** native to the Old World, yield the juice which, when dried, is known as **Lactucarium,** an extract known also under the name Lettuce Opium. The fact that lettuce eaten frequently induces drowsiness, was known in ancient times. and its reputation in this direction led Dr. Coxe (171), of Philadelphia, to suggest the collecting of the juice, after the manner employed in the making of opium. His experiments were published in 1799 under the title "Lettuce Opium." Since that date others writing on the subject created quite a demand for the lactucarium thus produced. It will be seen that the introduction of this substance to medicine came through usual empirical channels.

LAPPA, (BURDOCK)

This widely distributed plant known under several botanical names, such as Lappa minor (De Candolle) Lappa major (Gaertner) and Lappa tomentosa (Lamarck) is now official as Arctium Lappa. The commercial name **Burdock** seems, however, so expressive as to have become an universal appellation, and needs no interpretation.

The root of this plant has been ever used in its native haunts, which cover much of Africa, Europe, and adjacent lands. Like the honeybee it follows civilization, and like the English sparrow craves the company of man. Its burr journeys with man into all inhabited countries, and whether or not it be a welcome guest, its broad leaves are

to be found about every dwelling. As already stated, Burdock has been used in domestic medicine from time out of date. Several varieties, however, have inherited the common name, such works as Salmon, 1683 (570a) Samuel Dale, 1737 (179) Quincy, 1749 (532) Lewis, 1768 (382) Motherby, 1775 (451b) testifying thereto. In all these it is titled *Bardana.*

LEPTANDRA

Leptandra, **Veronica virginica,** grows in rich woodlands throughout the United States east of the Mississippi River, being found in abundance wherever it is native to a section and the woodlands have been undisturbed. The various species are known under many local names, such as black root, Culver's root, Brinton root, Bowman root, physic root, etc., as used by the settlers. They derived their knowledge of the drug from the American Indians, and designated the plant by the name of the man who used it in his practice, or from its characteristics. The Delaware Indians called the plant *quitel,* and the Missouri and Osage tribes knew it as *hini.* Leptandra was employed in decoction by settlers and savages alike as a violent purgative, and in the practice of early physicians of the United States it was used for bilious fevers. Peter Smith (605), author of the "Indian Doctor's Dispensatory," 1813, states that his father used "Culver's Root" to cure the pleurisy, which it did "with amazing speed." The use of the drug was confined to domestic medication until the appearance of the American Dispensatory (356), 1852, which gave it a general introduction to the profession of medicine. Professor W. Byrd Powell, a physician of high education, valued leptandra very highly, and it was upon his strong commendation to Professor John King (356), editor of the American Dispensatory, that it was there given a position.

LIMONIS, CORTEX ET SUCCUS

The lemon tree, **Citrus limonum,** is a native of the forests of Northern India, occurring elsewhere through the adjacent countries. It has been known from the beginning of written history in its native land, but its mention in Sanskrit literature occurs in more modern times, rather than in antiquity. The Arabian writers gave it the name *limun,* from the Hindu word *limbu,* or limu. (See extract from article of Dr. Rice, to follow.) The lemon was unknown to the early inhabitants of Greece and Rome, but it was mentioned in the third and fourth centuries A. D., in the *Book of Nabathæan Agriculture.* In this connection it may be said that the introduction of the lemon parallels somewhat the record of the orange. The use of the lemon as a grateful acid in drinks and cordials, as well as the peel of the fruit as a flavoring material in medicine, seems to have been known to primitive humanity. Possibly the most authoritative dissertation on the lemon, which embodies the history of the citrus family generally, is that by Dr. Charles Rice (see Frontispiece to this Bulletin), published in *New Remedies,* August, September, and October, 1878. With his

characteristic thoroughness Dr. Rice gives in the body of his work and in numerous foot notes a world of information concerning the derivation of the name of each member of the citrus family used in commerce, together with the record of its products. From his paper we quote, as follows:

Lemon is from the Arabic limûn and this, by way of the Persian, is related to the Hindu *limu, limbu, or nimbu. Adam* already in his *Hindi-Kosha,* (Calcutta, 1829), translates the Sanskrit *nimbu* into Hindi *limu.* This translation is no doubt correct, but the Sanskrit has evidently coined or adopted the word from the North Indian vernaculars. In Cashmeer it is still called *nimbu.* There are many names in Sanskrit for the Citrus-fruits, a number of them standing for lemon. The *Madanavinoda* (explained on p. 231, *New Remedies,* August, 1878) (399a) mentions two kinds of *nimbu* (or nimbûka), one of which is sour, and the other sweet. Another native term is *nisbu,* according to the *Sabdakalpadruma.* The Medievo-Greek is *leimónion lemónē.* The lemon is first mentioned in the book on Nabathæan Agriculture, under the name *hasîa* (see *Meyer, Gesch. d. Bot. III.,* 68).

Dr. Charles Rice, New Remedies, Sept., 1878.

LINUM

Flaxseed, or linseed (**Linum usitatissimum**) has been cultivated from all times in the Old World. From the dropping of its seeds it may become a weed, and thus is found wild in more or less favored locations throughout the temperate and tropical regions of the globe. Flax as a fibrous plant has been utilized throughout the journey of human civilization. The Egyptian tombs carry paintings illustrating the weaving of flax into cloth; the grave-clothes of the early Egyptians were made from flax, its record having been traced back to at least 2300 B. C. The seeds of the plant have ever been employed, both as a food and as a medicine. All the early historians, such as the Greek Alcman of the seventh century B. C., Thucydides and Pliny (514), refer to its qualities as a food, reciting that the seeds were used by the people, both externally and internally, as medicines. Charlemagne promoted its growth in Northern Europe. The plant reached Sweden and Norway from its native land before the twelfth century.

LOBELIA

Lobelia, or Indian tobacco, **Lobelia inflata,** was conspicuously introduced by Samuel Thomson (638) in the beginning of the nineteenth century. It has been, in domestic medication, in the practice of the Thomsonians, and also of the Eclectics, one of the most valued remedial agents of the American flora (388b). Following its empirical use, the first printed record concerning its emetic properties is that by the Rev. Manasseh Cutler, LL. D. (178), who in the American Academy of Science, 1785, under the title "Account of Indigenous Vegetables," mentions it under the name *Emetic Weed.* Following this, Schöpf (582), 1787, incorrectly ascribed to it astringent properties, stating erroneously that it was used in ophthalmia, evidently confusing the properties of *Lobelia inflata* with those of its relative, *Lobelia syphilitica.* The Indians of North America employed lobelia,

when necessity required, as a substitute for tobacco. The statement of Lewis and Clarke (381a), to the effect that the Chippewa Indians used the root of lobelia, refers evidently to the root of Lobelia syphilitica, no record concerning the use of Lobelia inflata by the Indians being found in such publications as the *Book of the Indians,* 1837, by Drake (198). It was not named in *Indian Medicine,* by Browne (104), (edited by W. W. Beach, 1877); Long's (393) account of the medicines and practice of the Indians of the West, 1819; Nuttall (477), who informed Dr. Mattson (415) that he had never known the Indians to use Lobelia inflata; *Indian Captivities,* though prolific as concerns the customs of the Indians; or the *American Herbal,* by Samuel Stearns, M. D. (612), 1772, which ignores Lobelia inflata, though referring to other species of lobelia. Neither Barton (43) nor Rafinesque (535) mention Lobelia inflata, from personal experience, as an Indian remedy. Catlin (131a) in his *Manners, Customs, and Condition of the North American Indians,* omits the drug. However, Mattson (415), 1841, in his *American Vegetable Practice,* states that "there is abundant traditionary evidence that lobelia was used by the Penobscot Indians, long before the time of Dr. Samuel Thomson, its reputed discoverer, but with the exception of that tribe, I have not been able to discover by any researches I have made that the American aborigines had any knowledge of its properties or virtues." Samuel Thomson (638), whose name is so closely linked with that of lobelia as never to be dissociated therefrom, says, "It has never occurred to me that it was of any value in medicine until this time (1793)," and also, "In the fall of 1807, I introduced lobelia, tinctured in spirit, as a remedy in asthma." Mattson (415), however, 1841, insists that its use by the people of New England was long before Thomson's time, reciting that "Mr. Phillip Owen, now eighty years old, relates that when a boy, he was sent into the field by his mother to collect some lobelia for a child, sick with quinsy, and that the herb, administered in the usual manner, afforded speedy and entire relief." The publication in which this occurs, dated 1841, shows that lobelia was a domestic remedy in 1770. Other evidence (see (389) *Drugs and Medicines of North America,* pp. 83-89) indicates conclusively that lobelia was a domestic remedy with the settlers of North America before the day of the noted empiricist Samuel Thomson, who, however, gave to it the conspicuity it has enjoyed for over a hundred years. It is this writer's opinion that lobelia will yet be shown to be one of the most valuable of all the remedies native to America, and he believes it would now occupy that position in "Regular" medication but for its historical connection with their arch-enemy, Samuel Thomson.

LYCOPODIUM

From the beginning of recorded time the minute spores of **Lycopodium (clavatum,** and other species), known also to the early botanists as *Muscus terrestris,* or *Muscus clavatus,* have been commended for their therapeutic virtues. This plant, the common club moss, is found throughout Central and Northern Europe, Russian Asia, even

to Japan, North and South America, the Falkland Islands, and even to the Cape of Good Hope, being so widely distributed as to have led, naturally, to its therapeutic reputation in common life in all parts of the world. The spores of lycopodium have been used in domestic therapy as an application to fresh wounds, and have thus a reputation as an absorbent styptic. Official in pharmacy in the middle of the seventeenth century, the English druggists seem not to have included the powder in their list of drugs before 1692, nor has it been official in any of the London pharmacopeias. Lycopodium is employed in Homeopathic and Eclectic medication, and in connection with shellac and earthy salts is also used in large quantity in the making of different colored signal fires, as well as those for evening celebrations.

MALTUM

The time of the introduction of malt **(Hordeum distichon)** antedates the lore of systematic medication. Germinated barley, kiln-dried, has been employed in the making of malted liquors since a very early date, and malt liquors have been in domestic use, both as a beverage and an extract, for a very long period. The introduction of malt into the pharmacopeia resulted from the empirical use of the semi-proprietary "Extracts of Malt," which a few years after the middle of the last century became popular in domestic as well as in professional use. Its introduction to medicine is, however (as with many other substances of merit or otherwise), due largely to the efforts of manufacturing pharmacists.

MANNA

Manna of commerce is supplied by the manna ash, **Fraxinus ornus,** of the Southern Tyrol, Italy, Switzerland, Asia Minor, and the mountainous islands of the Mediterranean and countries adjacent. In Central Europe it grows as an ornamental tree, the foliage being in great variation in shape of leaflets, and the fruit diverse in form. According to Flückiger and Hanbury (240), previous to the fifteenth century the manna of Europe was imported from the East, and was not derived from the manna ash. In early days manna was a natural exudation, much scarcer than at present, and much more expensive, the increase in the production being now artificially increased and also marked by a decrease in quality. During the sixteenth century the plan referred to above was devised of incising the trunk and branches to produce a more copious supply of the gum, thus largely increasing the amount of the market supply, although the method was strenuously opposed by legislative enactments. The name *Gibelmanna, manna-mountain,* by which an eminence of the Madonia range of mountains in Sicily is known, indicates that this mountain furnished manna during the days of the Saracens in Sicily. Manna has been used as a domestic remedy from all time as a gentle laxative, and, as mentioned in our article on Spigelia, is supposed, in domestic medicine in this country, to modify the griping qualities of a mixture of senna

and jalap. Its domestic use in America came through European home medication.

Professor Flückiger (see Preface) arranged with this writer to give unitedly the record of the American drugs and plants. One substance considered was "American Manna," the article being printed in the Am. Journ. Pharm., 1897, pp. 1 to 10.

MARRUBIUM

Horehound, **Marrubium vulgare,** is indigenous to Europe, but has been naturalized in America, where it is now very common. Its use as a bitter decoction led to its early introduction into domestic medicine, as well as to its popular use as a bitter flavor in candy. Probably the well-known horehound candy may be cited as a domestic medicine that has become popular as a confection. The date of the use of horehound as a sweetened domestic tea must have been very early in the records of European home medication.

MASTICHE

Mastic, **Pistacia lentiscus,** is an evergreen shrub, native to the Mediterranean shores, from Syria to Spain, being found also on the adjacent islands as far as the Canaries. The collection of mastic, however, is localized to the northern part of the Island of Scio, where from all time the tree has been known, exuding most abundantly the resinous tar that, when dried, is known as mastic. The origin of its use is lost in antiquity. Theophrastus (633), fourth century B. C., mentions it, and both Dioscorides (194) and Pliny (514) refer to it, in connection with the Island of Scio, or Chios. The writer of this article made a study of mastic during a journey to the Orient, but as yet has not published the paper. By distiliation with alcohol, mastic produces a drink, this also being described in the paper in preparation, the drink being probably of great antiquity, and known to the Greeks and Romans. The use of mastic in medicine followed its empirical employment as a breath sweetener (it being sold in all Oriental bazaars for this purpose) and as a flavor for cordials and other drinks. Perhaps the first record of its authoritative employment in medicine is about the thirteenth century, by the Welsh "Meddygon Myddfai" (507) (see Note, p. 1), as an ingredient of ointments.

MATICO

Matico, **Piper angustifolium,** is a shrub native to Bolivia, Peru, Brazil, Venezuela, and other South American countries. Its qualities are said to have been discovered by a Spanish soldier named Matico, the legend being that he applied some of the leaves to a wound, and observed that the bleeding was thereby stopped. This legend, current in South America, gave to the shrub the name *soldier's herb,* or tree. (See Stramonium.) It is probable, however, that he learned of its native use by the Indians. In the beginning of the nineteenth century matico came to the attention of the profession of medicine in North

America and in Europe, being conspicuously introduced by Jeffreys (340), a physician of Liverpool, who commended it, 1839, as a styptic and astringent. The introduction of the drug must, however, be considered as empirical, through the infusion of the leaves used by the soldier.

MATRICARIA

Matricaria chamomilla, German chamomile, is the cultivated form of *Chrysanthemum parthenium,* being cultivated for domestic use, in which it is distinguished from the *Anthemis nobilis,* or Roman chamomile. It has been in domestic use so long as to have made it familiar to all German housewives, and considerable demand has been created for it in sections of America where Germans have settled. It is a home remedy of antiquity.

MEL

Honey is a saccharine substance, generally collected by the honey bee, *Apis mellifera,* from the nectariferous glands of flowers and deposited in the comb by the insect when it reaches its hive. It is familiar to all civilized peoples as well as to the natives of many sections of the world. In some parts of the tropics wild honey is an article of importance. Crude honey comb was observed by us as one of the articles of export from Aden, Arabia, coming there by caravan from the interior of Arabia, as well as being brought from Somali Land, Africa. The domestic record of honey is lost in antiquity, it being mentioned in many early works, including the Bible, both New and Old Testaments, and such Oriental works as the "Arabian Nights" (88). In the making of confectionery and in domestic empirical medicine, honey has of course been a constant and a natural sweetener. Certain kinds of honey, such as the honey made from the opium poppy ("mad honey," 388c), or from the flowers of the wild jasmine, possess more or less narcotic action, which quality has never yet been intentionally utilized in medicine. Such compounds as honey of rose, honey of borax, and the like, came from the domestic use of honey; such confections preceded its use by licensed or orthodox physicians. *"Zardah (yellow rice)* is a word still used in Turkey, and refers to a dish of rice dressed in honey and saffron." *Burton.*

MENTHA PIPERITA

Peppermint is found throughout North America as well as England and the Continent. As described by Ray (536), the clergyman botanist, in his *Historia Plantarum,* 1704, it is called *"Mentha palustris —Peper-Mint,"* and is recommended by him as a remedy for weakness of the stomach and for diarrhea. Its cultivation was extensive in some parts of England as early as 1750, the herb being carried to London for distillation and the making of the oil. Peppermint is a favorite domestic herb used in decoction as a stimulant and also as a flavor. Fresh mint is employed to flavor a popular Kentucky alcoholic

beverage made of whisky, known as mint julep. This should be made by *inverting* in the sweetened diluted whisky a small bunch of young mint sprouts, thus getting the delicate aroma of the leaves, but not the bitterness of the broken stems.

MENTHA VIRIDIS

Spearmint is common throughout Europe, Asia, and North America, and, escaping from cultivation, is found wild throughout most of the temperate regions of the world. Parkinson, 1640, speaks of it as a garden plant only (492), and its mention in early mediæval lists of plants demonstrates that it was cultivated in the convent gardens of the ninth century. Turner's *Herball* (656), 1568, calls it *Spere Mynte*. Its use is largely that of a domestic and popular flavor in confectionery and as a perfume. In the form of an aromatic tea it has been a great favorite in domestic medicine, as is true also of its harsher relative, peppermint.

MEZEREUM

Daphne mezereum is an acrid shrub familiar to persons conversant with domestic medicine in mediæval English times, being employed by the herbalists, and also, somewhat, by the medical profession of that day. It was recognized in Culpeper (175) as an acrid substance, generally applied externally, although it was given internally in dropsy and some other affections, about a dram of the dried bark of the tree being mixed with three parts of water, and taken internally. Hooper (325) in his *Medical Dictionary* states that a prevailing method of preparation was to macerate thin slices of the bark of the fresh root in vinegar and apply it externally. In Stephenson and Churchill's *Medical Botany* (614a) a Mr. Pierson serves as authority for a Dr. Russel, who, as did Mr. Pierson, reviewed the uses of the drug as a substitute for mercury and as an application in scrofulous and cutaneous affections, but with decided opposition to its use, on account of its exceeding acridity, a refreshing innovation in former orthodox medication. This imported, disagreeable drug crept into the United States Pharmacopeia and American practice by reason of the fact that it was made a constituent of the Compound Syrup of Sarsaparilla.

MOSCHUS

Musk, **Moschus moschiferus,** was described by Aëtius (6), who lived about the middle of the sixth century A. D. Benjamin de Tudela (55a), who traveled through the East about 1160-1173 A. D., also mentions musk, stating that its native home is in Thibet. Its sale in Egypt was mentioned by Leo Africanus (378b), 1526. Its introduction to medicine, however, came at a much earlier period, its employment in that direction following the commendation of Aëtius (6). Its therapeutic use was due to its introduction from the Arabians. Tavernier (1676), asserted (627) by Eugene Rimmel (552) to be the first European traveler to mention this drug, reports that he bought 7,673

pods of the musk-deer, indicating its abundance at that date. The use of musk as a perfume antedates European record, whilst its introduction as a stimulant has no record of its origin. This writer learned during his services in prescription pharmacies that when tincture of musk was prescribed, the patient was expected to die.

MYRISTICA

The tree yielding nutmeg, **Myristica fragrans,** is native to New Guinea and islands of the Malay Archipelago, from whence it has been introduced to Sumatra, Brazil, the West Indies, and other countries favorable to its cultivation. It has been asserted that the nutmeg was not known to the ancients, but von Martius (409), *Flora Brasiliensis,* 1860, contends that it was mentioned in the "Comedies of Plautus," about two centuries B. C. The nutmeg has been an article of import and export from Aden since the middle of the twelfth century, and by the end of that century both nutmeg and mace had reached Northern Europe. This spice came naturally into domestic culinary use, it being classed with mace, cloves, calamus, etc. Its use in legalized medicine, also, has been chiefly in the direction of a flavor to other substances, and followed similar empirical preparations.

MYRRHA

Myrrh, a gum-resin from **Commiphora myrrha,** has been a constituent of incense, perfume, and such, in ceremonial religious life, as well as an article employed by the common people from the days of the most remote antiquity. It was one of the rare and precious gum-resins in the days of the Bible, being mentioned in connection with such substances as frankincense and olibanum. That it was highly valued in the days of Solomon is evident from the fact that it is mentioned conspicuously in connection with the gifts brought by the Queen of Sheba to that monarch. It is yet obtained from Arabia, the present writer finding it in the bazaars of Aden (and adjacent Arab bazaars), a city that had an existence as a port of export for Oriental products in very early days. Theophrastus (633), Pliny (514), and other early writers mention this drug, which from all times has been valued in domestic medicine for its aromatic qualities, and as a constituent of incense in religious ceremonies. In Herodotus (Macaulay, Book II, p. 153) it is named as one of the substances used by the Egyptians in embalming the dead.

"First with a crooked iron they draw out the brains through the nostrils, extracting it partly thus and partly by pouring in drugs; and after this with a sharp stone of Ethiopia they make a cut along the side and take out the whole contents of the belly, and when they have cleared out the cavity and cleansed it with palm-wine they cleanse it again with spices pounded up; then they fill the belly with pure myrrh pounded up and with cassia and other spices *except frankincense,* and sew it together again."

NUX VOMICA

This drug is the fruit of a tree (**Strychnos nux-vomica**) indigenous to most parts of India, especially the coast districts, and is thought to have been introduced into medicine by the Arabians. The natives of India did not, however, value it, probably because of its exceedingly energetic nature. Although the Hindoos of the present time employ it extensively, it is probable that they were not acquainted with it before its introduction into Germany, in the sixteenth century. Its European employment was originally as a drug-shop poison, for the purpose of killing animals and destructive birds, such as crows; it was not until after the days of Parkinson (492), 1640, that its employment in medicine began. The Pharmacopeia values nux preparations by the amount of strychnine present, the Eclectics by *quality,* strychnine being subordinated so as not to dominate the product unduly.

OPIUM

The discovery of the medical qualities of opium is lost in times gone by. Theophrastus (633), the third century B. C., mentions it. The poppy producing opium is (from a remote period) native to Asia Minor and Central Asia. The early use of the decoction of the poppy head, as well as the early use of opium, the product of the poppy, *Papaver somniferum,* antedates, as has been said, professional medication and crept into home use as well as professional use at a very early period. The Welsh physicians of the seventeenth century used a wine of poppy heads to produce sleep, and prepared pills from the juice of the poppy. Syrup of poppy was given a position in the first pharmacopeia, of the London College, 1618. Dioscorides (194) distinguishes between the juice of the poppy capsule, and an extract from the entire plant. Inasmuch as he describes how the capsule should be incised and the juice collected, it is evident that he plainly refers to opium. Pliny (514) also devotes considerable space to this drug. Celsus (136), in the first century, mentions it, and during the period of the Roman Empire it was known as a product of Asia Minor. It is supposed that the prohibition of wine by Mohammed led to the spreading of the use of opium in some parts of Asia, the drug being then an import from Aden or Cambay. The Mohammedans introduced opium into India, it being first mentioned as a product of that country by Barbosa (39), who visited Calicut in 1511, its port of export then being Aden or Cambay. The German traveler Kämpfer (349), who visited Persia in 1685, describes the various kinds of opium then produced, stating that it was customary to mix the drug with various aromatics, such as nutmeg, cardamon, cinnamon, and mace, and even with ambergris. It was also sometimes colored red with cannabis indica, and was sometimes mixed with the strongly narcotic seeds of stramonium. This writer could find no instance of the Turkish people of the present using opium in any form (388c). A description in brief detail only of the many kinds of opium and the different qualities of opium, as well as its sophisticants and adulterants, is herein un-

necessary. It may be briefly stated that this insidiously active drug came to the attention of the profession of medicine through its well-known qualities, as established by the people of its native land. Much the writer recorded concerning opium and its culture as noted in his travels in Turkey, is to be found in Lloyd Brothers' Drug Treatise No. XXII, "Opium and Its Compounds."

PAREIRA

Pareira brava (**Chondrodendron tomentosum**) is a climbing shrub, native to Peru and Brazil, and adjacent sections of South America. The Portuguese missionaries of the seventeenth century who visited Brazil learned of its reputed qualities from the natives, who under the name *abutua* or *butua* valued it highly for its therapeutic virtues. The Portuguese gave it the name *Pareira brava,* or *wild vine*, with reference to its mode of growth. Its reputed medicinal qualities, learned from the natives, were made conspicuous by Michel Amelot, ambassador of Louis XIV to Lisbon, who found it in that city and carried it with him to Paris. The botanist Pomet (519), 1694, described the plant in his "History of Drugs." Paris. After an eventful botanical record embracing considerable discussion as well as confusion with some other drugs, during which Pareira brava enjoyed professional conspicuity in Europe, it dropped from general use, the extraordinary pretensions long made for it being now practically forgotten.

PEPO

The seed of the pumpkin, **Cucurbita pepo,** in the form of an infusion as well as in a pulpy mass, has been long a favorite home remedy for intestinal parasites, which use introduced it to the medical profession. Although the medical profession has used pumpkin seed somewhat in this direction, as a rule they now prefer other remedial agents, santonin being employed for round worms and pomegranate bark for tape worms.

PHYSOSTIGMA

Physostigma, Calabar bean (**Physostigma venenosum**), is the fruit of an African vine growing near the mouths of the Niger and the Old Calabar Rivers, Guinea, where it furnished one of the ordeal tests of the pagan tribes of tropical Western Africa. The seed is therefore known as the "Ordeal Bean," and was administered in the form of either an emulsion or infusion, as the case might be. It was introduced to England by Dr. F. W. Daniel (182), about 1840, its method of use being again mentioned by him in a paper read before the Ethnological Society, 1846. Professor Balfour (36), of Edinburgh, obtained the plant from the Rev. W. C. Thompson, a missionary to the west coast of Africa, and described it in a paper read before the Royal Society of Edinburgh, including it also in his "History of Plants." Its power of contracting the pupil of the eye was discovered by Dr. T. R. Fraser (246) of Edinburgh. Its power of paralyzing the

action of the heart, was indicated through its native employment as an ordeal poison.

PHYTOLACCA

Poke root, **Phytolacca decandra,** is a handsome plant found throughout the temperate regions of North America, east of the Mississippi River, thriving in rich bottom lands, fence corners, and woody pastures. The American Indians used it, powdered to a pulp, as a poultice. The early American settlers applied it in like manner as a poultice to inflammatory conditions of the cow's udder, in the disease known as garget, a circumstance which has given to the plant one of its common names, *garget plant.* Phytolacca crept thence into more extensive use in domestic medicine, a tincture of the same being next employed. Following this came its introduction into the "licensed" profession. In domestic medication the drug was employed from the date of the early settlers, and in the practice of Eclecticism it has ever been a valued remedy. To cite American references to this drug would be to name all the publications of the liberal authors connected with medicines.

PILOCARPUS

Pilocarpus jaborandi is a shrub native to Eastern Brazil, where Piso (511), of Holland, 1643, first mentions its use as a modifier of the infusion of ipecac. Plumier, 1693, also (515) refers to the mixture, describing two varieties of jaborandi. Its conspicuous introduction to medicine occurred in 1874, when Dr. Coutinho (170), of Pernambuco, from observing its native uses, made its qualities as a sialogogue known to the medical world. The plant has been cultivated in European greenhouses since the middle of the last century, but no "scientific" observer gave it the honor of a thought in therapeutic directions.

PIMENTA

Allspice **(Pimenta officinalis)** is the berry of a tree native to Jamaica and other West India islands, where it was found in use as a spice by the explorers in the days of the enthusiasm of the new world discovery. It was probably this substance that Garret, a druggist of London, 1601, gave to Clusius (153), who described it in his *Liber Exoticorum.* According to Parkinson's (492) *Theatrum Botanicum,* 1567, it was imported into England soon after the beginning of that century, under the name *round cardamom.* It has received many different names in its passage through various countries. Its chief use is as a spice, but a distilled water made therefrom has also been employed.

PIPER

Black pepper **(Piper nigrum)** is a perennial, climbing shrub native to the forests of Malabar and Travancore, whence it was introduced to other tropical countries, such as Sumatra, the Philippines, West Indies, and the Malay Peninsula. It has been used as a spice

and as a stomachic remedy by the natives of the afore-named and other countries since the date of the discovery of the remedy, and probably from all time preceding. Pepper was mentioned by Theophrastus (633), who described two kinds. Dioscorides (194) and Pliny (514) both give it a place in their writings. As early as 64 A. D. it was mentioned as occurring on the Malabar Coast. The Romans at Alexandria, A. D. 176, levied on it a duty. The Arabian authors of the Middle Ages, twelfth and fourteenth centuries, described it fairly. In the European countries of the Middle Ages pepper was considered the most important of all spices, being the foundation of much of the wealth of Venice and Genoa during their greatest commercial activity. It has been used as a medium of exchange when money was scarce, and when Rome was besieged by the Goths the ransom included three thousand pounds of pepper. In fact the value placed upon pepper in the records of the past is in itself an indication of its importance to the people who used it.

PODOPHYLLUM

This handsome plant, **Podophyllum peltatum,** known also as mandrake, or may apple, is one of the most attractive features of the early spring in North America, resisting with remarkable efficiency the aggressive inroads of the agriculturist. It was used by the North American Indians, the Cherokees employing the fresh juice of the root for deafness, and the Wyandottes made a drastic cathartic, from which the drug's harsher qualities were removed by roasting. The once celebrated "Indian doctors," Peter Smith (605) and others, employed the root as an escharotic, in which direction it came into early veterinary practice. The early American physicians and writers on medicine praised its qualities as a purgative, its active cathartic nature having been known, as has been said, from the days of the Indians. The vegetable substitute for the once popular antimonial plaster used so freely by "Regular" physicians was the Compound Tar Plaster of the Eclectics. This contained podophyllum, phytolacca, and sanguinaria.

PRUNUM

The cultivated varieties of the prune tree (**prunus** or prunes) are believed to descend from a wild prune native to Greece, the shores of the Black Sea, and the Caucasus, reaching even into Persia. Pliny (514) records the fact that one of the numerous varieties of the plum tree known in his day afforded a laxative fruit. The pulp of the prune has been used in domestic medicine as well as by the medical profession, parallelling (or following) the efforts of those concerned in early medication. The pulp of the French prune was an ingredient of the once celebrated *Lenitive Electuary.* History does not record the beginning of the use of this fruit in the confections formerly so popular in domestic medicine.

PRUNUS VIRGINIANA

The **Prunus virginiana** *(wild black cherry)*, found throughout the eastern parts of the United States, has been widely used in domestic medicine since the days of the Indian, being perhaps more highly valued in this direction than by members of the profession, although it has been recognized in the Pharmacopeia since the first edition of this work, 1820. No more popular bark of a native tree, excepting sassafras, is known to home medication. It has a place in all works on early American domestic medication.

PYRETHRUM

Pellitory, or Spanish chamomile **(Anacyclus pyrethrum)**, is a widely-distributed plant known in different countries under different names. According to Pliny (514) it was the herb used by the Magians under the name *parthenium* against intermittent fevers, and according to Dioscorides (194) it is the plant that, under the name *anthemis*, was used in the same manner. It is mentioned in the "Arabian Nights" (88) under the name *ukhowan*. It is found throughout European Turkey, and according to Forskal southward to the mountains of Yemen, where it is called *mœniat*. According to De Candolle (122) its introduction into Britain was perhaps before the coming of the Romans. The European colonists carried it, according to Josselyn (345) to Northeast America before 1669, where it is to be found both under cultivation and, having escaped therefrom, as a wild plant. Once a popular remedy in agues, its use is now practically discontinued, even in domestic medicine. Physicians as a rule neglect it, but it is employed by them in a few exceptional instances.

QUASSIA

Quassia amara takes its name from a slave of Surinam, named Quassi (see article Quassia Amara, J. U. Lloyd, *Western Druggist*. Chicago, Jan., 1897), who used the plant as a secret remedy, with great success, in the treatment of malignant fevers common to his locality and climate. Daniel Rolander, a Swede, became interested in the drug, and "in consequence of a valuable consideration" purchased from the slave Quassi a knowledge of the drug composing his remedy. Rolander returned to Stockholm in 1756, when he introduced the drug to Europe. In 1760 (or according to another reference, 1761) Carol. Gust. Dahlberg, an officer of the Dutch army and an eminent botanist, a pupil of Linnæus (385), returned to Sweden from Surinam, where he too had become acquainted with the slave Quassi, and through kindness to him had so gained his affection that he revealed not only the composition of his secret remedy, but even showed to him the tree from which the drug was derived. Dahlberg procured specimens of the root, flowers, and leaves of the tree, preserving them in alcohol, and presented them to Linnæus, who named the wood *Lignum quassiæ*, in honor of the slave, and established a new genus for the plant, which

he named *Quassia amara.* The drug was brought to the notice of the medical profession by Linnæus' lectures on materia medica, as well as through a dissertation written under his direction, in 1763 (385), by one of his pupils, Carolus M. Blom. Be it known, however, that more than a little questioning exists as to the exact plant employed by the slave Quassi. As pointed out by Dr. Wright, the leaves pictured in the Linnæan Dissertation belonged to another species than the Quassia amara, an error corrected by the younger Linnæus.

In this connection it may be stated that Philippe Fermin, a French physician and traveler in Surinam, spelled the name of the slave *Coissi,* questioning somewhat the fact of his having discovered the uses of the remedy, which Fermin states had been used in Surinam as early as 1714. In this connection it may be noted that, according to Murray, a spice dealer of Amsterdam, Albert Seba, is said to have had in his collection a specimen of a bark of a tree named *quasci* as early as 1730. Be this as it may, the drug known as quassia under the empirical introduction given by the natives of Dutch Guiana became known to European civilization, and in 1788 became official in the London Pharmacopeia. Concerning the origin of the drug, the German Pharmacopeia, 1872, demanded that it be the wood of *Quassia amara.* In the second edition, 1882, the *Picræna excelsa* was admitted concurrently therewith, the latter being the official quassia of the present Pharmacopeia of the United States.

QUERCUS

The bark of the oak, **Quercus alba,** is strongly astringent and has ever been used in domestic medicine where an astringent material is applicable, as for example, in dysentery, hemorrhages, etc. In the form of a poultice, a decoction, and as a tincture it has a domestic record, probably in common with other species of oak in all countries. The medical profession has added little, if anything, to the domestic uses of the drug, as recorded by Rafinesque (535), Porcher (520), Cutler (178), and the early American dispensatories and works on materia medica.

QUILLAJA

Soapbark, **Quillaja saponaria,** named by Molina (444), in 1782, in his "History of Chili," is the bark of a South American tree, having similar qualities to other soap weeds or barks, derived from various plants and trees, and used by the natives of different countries as a substitute for soap, or rather as a material for purposes similar to those of soap. Among the first contributions to the literature of saponaria is that of Henry, Jr., and Boutron Charlard, *Amer. Jour. of Pharm.,* 1841, xii, p. 209, in which the now well-known acrid, frothing qualities of the drug are mentioned, the statement being that the name originated from the Chilean term *quilloan,* meaning, *to wash.* In the *American Medical Intelligencer,* Sept. 15, 1840, Dr. Ruschenberger, of the United States Navy (*Am. Jour. Phar.,* 1841, p. 211), contributes an article on this bark, which, according to his observations in Chili, 1827, was

used principally for cleansing purposes. Dr. Ruschenberger returned from Chili in 1829 with specimens of the bark, stating that as late as 1833 the extract had not been used in Valparaiso, although in 1835 Dr. J. Stiles, of Valparaiso, is authority for the statement that at that (1835) date the extract had been made in that city, and was being used experimentally. The natives of South America employ an infusion of the drug as a wash, which led Dr. Ruschenberger to say, "From what I have seen of the effects of this cold infusion, I should be disposed to give it a fair trial as an injection in leucorrhea, with the expectation of very favorable results." The nature of quillaia, so nearly resembling the qualities of senega, led to the expectation that it would parallel that drug in its remedial qualities in the direction of coughs and pulmonary affections. It has not, however, become a favorite other than as a producer of suds and as a frother for syrups, in which direction the extract has been employed in the making of the popular American beverage, the so-called *soda-water,* which use the Government has now wisely prohibited.

RESINA, See TEREBINTHINA

RHAMNUS. (RHAMNUS PURSHIANA, U. S. P.)

Rhamnus catharticus (Buckthorn) is of wide distribution, prevailing over Northern Africa, most of Europe, the Caucasus, and into Siberia. In some instances it becomes almost a small tree, Fluckiger having a specimen 8 inches in diameter. It was known as a laxative before the Norman Conquest, being called Waythorn or Hartshorn. The Welsh physicians of the 13th century (507) prescribed the berries, under the name Syrup of Buckthorn, a title which, recognized by all writers on domestic or official medicine, still prevails. In the London Pharmacopeia, 1650, this syrup, aromatized, became official.

The official drug of the Pharmacopeia **(Rhamnus purshiana)** is not only related botanically to the above, but is therapeutically similar, being laxative in small doses and cathartic in large doses. The tree (Rhamnus purshiana) is distributed over the mountain ranges of the Western Pacific States, being most abundant in California and Oregon. Possibly collectors do not distinguish between this species and Rhamnus californica. To the settlers of that region it has long been known as Chittim wood, an infusion of the bark being used as a cathartic.

Dr. J. H. Bundy, an Eclectic physician of Colusa, California, impressed with its value, brought the bark, under the name *Cascara Sagrada,* to the attention of Parke, Davis & Co., of Detroit, Michigan. This energetic firm introduced it in 1877. through the columns of their publication, *New Preparations,* (1877 and 1878).

The remedy became a great favorite, and within a reasonable period was in demand throughout the civilized world, becoming official in the Pharmacopeia of the United States. 1890.

The remarkable record of this drug has been a subject of many contributions to botanical and therapeutical literature, much of interest even now remaining unwritten. To this writer its journey from the aborigines to scientific use and therapeutic study appears to parallel the course of such drugs as coca, jalap, benzoin, sassafras, croton tiglium, etc.

Summary.—To Dr. J. H. Bundy, Colusa, California, 1877, is due the credit of introducing the bark of Rhamnus Purshiana (Cascara Sagrada) to the medical profession.

To "New Preparations," Parke, Davis & Co., of Detroit, Michigan, (1877 and 1878) is due the credit of bringing the drug to the attention of physicians and pharmacists. The firm of Parke, Davis & Co. introduced to the world the preparations of this drug, of which they were, for some years, the sole manufacturers.

A descriptive treatise that will record some unwritten phases of its dramatic history, familiar only to those concerned in its introduction, should not be lost to posterity. The following, contributed by this writer to the Research Committee of the American Pharmaceutical Association (vol. 44, 1896) is a brief summary.

HISTORY AND NAMES OF RHAMNUS PURSHIANA. (CASCARA SAGRADA)

By J. U. Lloyd.

*Contribution to the Research Committee of the American Pharmaceutical Association.**

In a paper contributed to "New Preparations,"† October 15, 1877, p. 8, the late Dr. J. H. Bundy, an Eclectic physician of Colusa, California, commended "Cascara Sagrada" as a valuable remedy in the treatment of constipation. This notice was by means of a brief note that was part of a paper on Berberis aquifolium, Dr. Bundy promising, however, to give it further attention, as follows:

"It is not my purpose to treat on Cascara Sagrada in this paper, but using it in connection with the Berberis, I simply make mention of it. In the future I will introduce the drug to the profession."

This, so far as the writer can determine, was the first reference concerning this remedy in pharmaceutical or medical print. Agreeably to promise, in January, 1878,‡ Dr. Bundy contributed a paper on the subject, "Cascara Sagrada," in which he gave the uses of fluid extract of "Cascara Sagrada." Following this came many papers from Dr. Bundy and other physicians, twenty contributions on the subject being printed in "New Preparations," 1878, to which journal, with few exceptions, the subject was confined during 1877 and 1878. Dr. Bundy stated in his paper (1878) "A description of the Cascara I am unable to give at this time, but suffice it to say that it is a shrub, and in

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*Introductory to a contribution from chemical investigations of Rhamnus Purshiana, undertaken by Alfred R. L. Dohme.

†New Preparations, Detroit, Parke, Davis & Co.

‡New Preparations, January, 1878, p. 1.

due time its botanical name will be known." He neglected, however, to concern himself further in the matter.

In the fall of 1878, Dr. C. H. Adair, of Colusa, California, a partner of Dr. Bundy, sent the writer specimens of the bark and botanical specimens of the tree yielding it. These, on identification by Mr. Curtis G. Lloyd, proved to be Rhamnus Purshiana. This fact was announced in a paper on "Some Specimens of Western Plants," presented to the American Pharmaceutical Association held at the meeting in Atlanta, Ga., November, 1878, (Proceedings, 1879, p. 707) and completed the drug's history.

Names.—Dr. Bundy supplied the drug under the Spanish name "Cascara Sagrada," a name said to have been in local use throughout some sections of California, which soon came to be the common name of the drug, and will surely dominate all others as long as the drug is in use. The anglicised name *"Sacred Bark"* has also been applied to the drug, and the Scriptural term Chittim bark was also employed in early days in some parts of California, but these last names are now obsolete.

RHEUM

Rhubarb (**Rheum officinale,** etc.) is a gift of the Chinese, who have used it in domestic practice from all times, as noted in the herbal *Pen-king,* probably the production of the Emperor Shen-nung, the "father of Chinese agriculture and medicine," about 2700 B. C. As exported from its home in China, it has been respectively known as Russian, Turkish, and Chinese rhubarb, in accordance with the country through which it reaches the market from its native land. As a cathartic and a laxative this drug is sold in large amounts, having been accepted as a household remedy in syrups and tincture forms the world throughout. It is a gift of empiricism to the medical profession.

RHUS GLABRA

Sumach, **Rhus glabra,** is found in most of the temperate parts of the United States, to which it is indigenous. The North American Indians used the powdered seeds to treat piles and as an application to wounds, the juice of the fresh fruit being used as an application to warts and in skin diseases like tetter. In domestic medication, following the Indians, the roots were used by the settlers for rheumatism, in alcoholic tincture, as well as in infusion. In domestic medicine the berries were also employed in a decoction, as a gargle in quinsy, ulceration of the mouth and throat, and, following the Indian use of the drug, as a wash for ringworm, tetter, and offensive ulcers. These well-known uses of the American plant, so ornamental after the frost strikes its leaves in the fall, led to its introduction into professional medicine. In Turkey the berries of sumach are used (so this writer was informed) in starting their popular curd food.

ROSA GALLICA

The rose, in some form of its many varieties, is indigenous to the warmer parts of Europe, Asia Minor, the Caucasus, and other countries. Its use in medicine as well as in perfumes dates from the earliest times. The *Rosa gallica* is said to have been introduced into France by the Count of Champagne on his return from the Crusades in 1241. In the study of attar of roses made by the writer on the bottom lands beneath Mt. Olympus in Turkey, the roses planted in rows appeared much like raspberry fields, the roses being of a rather insignificant appearance, but very fragrant. The use of the rose in confection form, in pharmacopeial medicine, once very popular, has, with the exception of its employment in blue mass *(Massa hydrargium)*, become nearly obsolete. In the "Arabian Nights" (88), rose water is often referred to, and in Turkish home life it is employed as a refreshing perfume after bathing.

RUBUS

Blackberry, **Rubus villosus,** grows abundantly in most parts of the United States. The roots of the various species as well as varieties or rubus are more or less astringent and have been used in domestic medicine from the days of America's first settlement. The Cherokee Indians (Rafinesque [535]), chewed the root of this plant and swallowed the saliva for a cough, probably its astringency being helpful to the throat membranes. They also used a poultice of it for piles, in which direction its mild astringency seems rationally to adapt it. A syrup of blackberry root has been a great favorite in some sections of the country as a remedy for dysentery. This use of the drug in domestic medication, in which it has always been valued in America, led finally to its employment by the members of the medical profession. The juice of the blackberry fruit, spiced and mixed with whisky, is and has ever been a valued carminative drink in Kentucky and other parts of the Southern United States, and founded the pharmacopeial blackberry cordial.

SABAL

Saw palmetto, **Serenoa serrulata, Sabal serrulata.** The berry of the saw palmetto, practically unknown in medicine before 1879, came rapidly into conspicuity, both in pharmacy and in medicine, after that date. It had been observed by the settlers of the South that animals feeding on the matured fruit "grew very sleek and fat," a fact that was ascribed to the therapeutic qualities of the berries, reasoning from which they prepared a decoction of the fruit for domestic medication. In 1877, Dr. Reed, of the Southern United States, in an article entitled "A New Remedy," in the *Medical Brief*, St. Louis (417), stated that several persons in his neighborhood were using a preparation of the berry, giving instances of its use in various directions. This article was reproduced in *New Preparations* (467), July, 1879, and was followed in the same publication by another article from the *Medical*

Brief, in which Dr. I. J. M. Goss, then of Marietta, Georgia, states that he had been induced to use the remedy and considered it a satisfactory one. After this introduction the drug came repeatedly to the attention of practitioners of medicine. Manufacturing pharmacists gave it especial attention, and at the present time it is one of the most important remedial productions of the South. Thus the experimentation of the people, following its apparent effect on animals, was followed in turn by the investigations of the medical profession, and the remedy was finally introduced to the pages of the Pharmacopeia. In our opinion the volatile oil and its decomposition products are of exceeding interest and will yet be a prolific source of detailed research.

SABINA

Sabina **(Juniperus sabina)** is native to the mountainous portions of Austria, Switzerland, and some parts of France, being also found in the Pyrenees, Italy, the Caucasus, and other countries in regions far above the sea level. It is also found in the northern parts of North America. Sabina was used in veterinary medicine, as mentioned by Marcus Porcius Cato (132), a Roman author, 200 B. C. It was also known to Dioscorides (194) and Pliny (514). The early domestic leech-books, before the Norman Conquest, gave it a place. Charlemagne ordered that it should be cultivated on the imperial farm. Macer Floridus (397), in the tenth century, commended the use of Sabina in wounds and ulcers.

SACCHARUM

The sugar-cane **(Saccharum officinarum)** is cultivated in all tropical countries, such as India, China, Mexico, the West Indies, etc. Its native land is probably India, or the Indo-Chinese countries and islands. As made from the cane, sugar has been known from time immemorial. It is mentioned by such early writers as Theophrastus (633), Herodotus (314a), and others, who knew raw sugar as *honey of canes*, and in the early Christian era sugar became well known under the name *saccharon*. Dioscorides (194), A. D. 77, describes it as obtained from India and Arabia Felix, stating that it resembled salt in brittleness. Pliny (514) mentions it under the name *saccharum*, and an unknown writer, A. D. 54-68, mentions it as an article of import to the ports of the Red Sea opposite Aden (see Burton for description of that country, "First Footprints" (113), etc.), but it is doubtful whether it was brought from the eastern or western parts of India. It is mentioned by Abu Zayd al Hasan (240), A. D. 850, as produced on the Persian Gulf, and A. D. 950 Moses of Chorene states that it was then manufactured in quantities. Sugar was introduced into medicine in the tenth and eleventh centuries by Rhazes (a physician of Bagdad and Persia, who died about A. D. 923), Haly Abbas (295), and others; but it had ever been employed, as it is still employed, in domestic medicine for the purpose of disguising unpleasant materials and for sweetening acrid substances. Burton (113) found crude sugar an

article of domestic use and preparation (in his journey to Herat) by several tribes of native Africans. Sugar as a remedy in itself has been quite often a therapeutic factor in both domestic and regular medication.

SALVIA

Sage, **Salvia officinalis,** has been used by the herbalists from all time, being likewise employed as a flavor in culinary directions. Pliny (514), Theophrastus (633), and other early writers mention this plant, which is now cultivated in all temperate regions of the world. It is still employed in decoctions as a domestic medicinal drink, and when bruised the fresh herb is applied as a poultice to sprains and swellings. Its empirical use antedates its employment in systematic medicine.

SANGUINARIA

Bloodroot, **Sanguinaria canadensis,** is found throughout the temperate regions of the United States east of the Mississippi River. It was used by the Indians as a dye for coloring their garments and for staining their faces and bodies, in which direction it fulfilled the double object of a coloring material as well as to keep away insects, it being disagreeable to them. The Indians also used it as an acrid emetic and, mixed with other herbs, in the form of an ointment as an application to indolent ulcers, its action being somewhat escharotic. The early settlers employed it in these directions, while its efficacy in coughs and colds established it as a constituent of home-made compounds such as syrups and tinctures. The professional use as well as great reputation of this drug and its alkaloidal constituents (388a) are due to the Eclectic school of medicine, although its qualities had been well established previous to the systematic efforts made by physicians of this school. Sanguinaria was mentioned by Barton (43), Cutler (178), Thacher (631), Schöpf (582), Bigelow (69), and other early investigators, whose recorded statements demonstrate the method of its introduction to have been as herein described. In connection with lard, arsenic, and hydrated ferric oxide it constitutes a once popular cancer remedy. It is a constituent of the early Eclectic Compound Tar Plaster (see Phytolacca).

SANTALUM RUBRUM

Red sandalwood, red sanders **(Pterocarpus santalinus),** is a small tree native to the southern part of the Indian Peninsula, being found at Canara, Mysore, and the Coromandel Coast. It is also found in the Southern Philippines. The wood is obtained chiefly from plantations in the forests of the Kurnool Hills and adjacent localities neighboring to Madras. The beginning of the use of the wood of this tree for temples and other primitive religious buildings is lost in antiquity. Marco Polo (518) refers to the fact that sandalwood was imported into China, distinguishing this variety by the word *red.* Garcia de Orta (480), of Goa, in the sixteenth century, distinguishes between

the fragrant sandalwood of Timor and the inodorous red sandalwood. In this connection it should be remembered that Santalum rubrum, or red sanders, has none of the qualities of the Santalum album, or fragrant sandalwood. And yet it is recorded that all the languages of India call it by the name red-colored sandalwood. In the Middle ages it was used in Europe for coloring purposes, being quoted in England, 1326 and 1399, at three shillings per pound, and it was entered on the accounts of the Monastery of Durham, 1530, along with spices and groceries. It is used in pharmacy as a coloring agent, after the manner in which it was employed in domestic economy of the olden times for the same purpose.

SANTONICA

The "wormseeds" are widely distributed in the northern hemisphere of the Old World, many varieties thereof being familiar to botanists and subject to much discussion. The unopened flowers of the head *(wormseed)* are collected in quantities on the vast plains or steppes in the northern part of Turkestan, the distributing point being the renowned fair of Nishni Novgorod, Russia, where, July 15th to August 27th, the celebrated exchanges of the products occur. Wormseed, however, is found in the Oriental bazaars, being brought for native and domestic use from the sections of country named, or from Afghanistan or Caboul. Dioscorides (194) mentions several species of wormseed, stating that the small seeds were mixed with honey and employed by the people as a remedy for ascarides. Alexander Trallianus (11), in the sixth century, commended this drug as a remedy for intestinal worms. Saladinus (570), 1450, and afterwards several authors of the sixteenth century, as Ruellius (561) and Dodonæus (195), refer to the remedy as a vermifuge for children. Its empirical use in domestic medication is maintained to the present time, and from this source its anthelmintic virtues were learned by the profession.

SARSAPARILLA

The drug sarsaparilla is furnished by the root of a climbing plant of the genus *smilax,* which prevails over the northern part of South America, the whole of Central America, and the west coast of Mexico. Many varieties contribute the drug of commerce. Its qualities were made known in early European annals from the commendation of explorers of the New World. Monardes (447) is authority for the statement that it was introduced to Seville about 1536 from "New Spain," but that a different variety soon followed from Honduras. The "Chronicle of Peru," by Pedro de Cieze de Leon (151), 1553, mentions sarsaparilla as growing in South America, where he observed it between 1533 and 1550. It was recommended as a cure for syphilis and acute rheumatism, the Spaniards calling it "an excellent medicine." In this connection it may be said that the name applied to it was *zarza parilla,* afterward becoming sarsaparilla. Like other remedies introduced in business channels for commercial purposes from the

wonderful New World, sarsaparilla enjoyed a marvellous reputation, which evidently was not interfered with by the fact that it returned great profits to the dealers. A little work issued in its behalf by Girolamo Cardano (123), of Milan, 1559, advocates it most strongly in the direction of the diseases mentioned. It found its way into pharmaceutical stores, where it made an eventful record as a new remedy from the New World. In domestic medicine from the time of its introduction a decoction has been "authoritatively" considered serviceable as a "blood purifier." It is not necessary to state that in the form of a sweetened decoction syrup of sarsaparilla has through several decades enjoyed continual conspicuity in the pharmacopeia.

SASSAFRAS

Sassafras is indigenous to the Western Hemisphere, occurring in Florida, Virginia, and as far north as Canada. It is found as far west as Kansas, but is there very scarce. Its occurrence in Brazil is recorded by Piso, 1658 (511). Sassafras was in medicinal use among the natives of Florida long before Ponce de Leon in 1512 set foot on the soil of this peninsula. It is generally stated and believed that the Spaniards in 1538, which is the date of De Soto's invasion of Florida, were the first Europeans to obtain knowledge of this drug; yet we can find no record of such a discovery in at least two narratives of this expedition that are accessible to us. On the other hand, there seemed to be sufficient evidence of the fact that the Spaniards gained a knowledge of sassafras and its medicinal virtues through the French Huguenot emigrants, who under their unfortunate leaders, Jean Ribault and René Laudonnière, occupied Florida between the years 1562 and 1564.

To the Spanish physician, Nicolaus Monardes (447), of Sevilla, in 1574, is to be credited the first detailed description of sassafras and its healing virtues, his information being gained, however, not from any actual experience in the sassafras lands but from personal consultation with travelers and from the government records at his command (239). From Clusius' (153) version of Monardes, 1593 (447), it is learned that the drug was imported from Florida into Spain some years previous to 1574, that the Spaniards in Florida, when overtaken by fevers and other diseases consequent to miasma and unwholesome drinking water, were advised by the few remaining Frenchmen to use this drug, which was called by the French sassafras (for reasons unknown to Monardes) and "pavame" by the Indians from whom the French obtained their information. Monardes (in Clusius' version) adds that sassafras grows in Florida in maritime places, such as are neither too dry nor too moist, being especially plentiful near the harbors of St. Helena and St. Matthews, where they form whole woods, which exhale such a fragrance (not true in the experience of this writer) that the Spaniards who first landed believed the tree to be the same as the cinnamon tree of Ceylon.

The illustration given by Monardes of the sassafras tree has been widely copied in the herbals of the sixteenth and seventeenth centuries, among which we name Dalechamps (1586) (181), Joh. Bauhinus

(Bauhin, 47) (1650), and Piso (1658) (511), the latter giving it the Brazilian synonym "anhuiba."

Francisco Hernandez (314), another Spanish physician, who traveled through Mexico between the years 1571 and 1577, speaks of the occurrence of sassafras at Mechuacan in Mexico. His work was translated by Francisco Ximinez, a monk of the convent of San Domingo in Mexico, in 1615.

The latter author is quoted at length on the subject of sassafras by Jean de Laet (368), a noted Dutch geographer (who died in 1649), whose work, "Novus Orbis, etc., 1633," testifies to the probably French origin of the knowledge of sassafras. Having taken the account given by Laudonnière as his source, he speaks, in Chapter XIV, concerning the land and inhabitants of the part of Florida traversed by the French, and calls attention to the tree as being prominent in the woods and refers to the exquisite odor of its wood and bark. He says that this tree is called "*pavame*" by the Indians and "*sassafras*" by the French.

Soon after the discovery of sassafras the drug was exported to Europe, as before stated, and became at once known in Spain and France. It was well known in Frankfort-on-the-Main as early as 1582, and in Hamburg in 1587, at which time it was (F. A. Flückiger, Am. Jour. Phar., 1876, p. 367) termed *lignum pavanum seu floridum, seu xylomarathri* (fennel-wood). Sailing expeditions to America were undertaken in those times to secure the wood as well as the root. An English merchant, Martin Pring, is recorded by Charles Pickering (510) as having with two small vessels arrived on the American coast in the beginning of June, 1603. The point named is 43 degrees and 44 degrees northern latitude, among a multitude of islands. Following the coast south in search of sassafras he entered a large sound, and on the north side in the latitude 41 degrees and "odde" minutes built a hut and enclosed it with a barricade, where some of the party kept guard while others collected sassafras in the woods. The natives were treated with kindness, and the last of the two vessels departed freighted on the 9th of August.

In connection with the introduction of sassafras root into England, Daniel Hanbury (Proc. Am. Phar. Assoc., 1871, p. 491) unearthed the following interesting record contained in the Calendars of State Papers of the Public Record Office:

"Instructions for suche thinges as are to be sente from Virginia, 1610.

"(1) Small Sassafras Rootes to be drawen in the winter and dryed and none to be medled with in the somer and yt is worthe 50£ and better, p. Tonne," etc.

But, still, the exact botanical origin of sassafras was not known to the writers of the seventeenth century. While they were well acquainted with the peculiar foliage and the other characteristics of the tree, the flowers and the fruit were expressly stated to be unknown to such writers as Clusius (153), (Monardes) (447), 1593, Joh. Bauhinus (47) (1650), and Piso (511) (1658).

Two early statements concerning the fruit may, however, now be recorded.

Caspar Bauhinus (48), who named the sassafras tree "arbor ex Florida ficulneo folio," in 1623 reports that specimens of the leaves and the fruit of the tree were sent to him by Dr. Doldius, of Nuremberg, and he describes the fruit as oblong, rugose, and attached to very long pedicels.

Likewise Jean de Laet (368), in the index to the chapter on sassafras of his afore-mentioned book, requests the reader to insert in the text that the fruits of this tree were brought to the notice of the author by a person returning from Novo Belgio, and adds that the fruit does not differ much in form from the berries of the laurel, although it is much smaller. It contains a white nut of bitterish taste, divided into two parts.

As far as we can ascertain, Plukenet (514a), as late as the year 1691, was the first to give an illustration of the berry, which, however, is faulty, because it is void of the acorn-like calyx. The trilobed leaves are also illustrated, and the botanical name affixed to it by Plukenet is "cornus mas odorata, foliis trifido, margine plano, sassafras dicta."

Catesby (130), true to his task as set forth in the title of his book on the natural history of Virginia, etc., viz.: to correct faulty illustration of plants by preceding authors, gives (in 1731) a good picture of sassafras, including the fruit and flowers.

In the middle and latter part of the eighteenth and the earlier part of the nineteenth century sassafras was studied in its native country by such celebrated travelers as Peter Kalm (350), J. David Schoepf (582), F. A. Michaux (433), and Fred Pursh (528). Peter Kalm's account especially (350) contains many points of interest.

The author's boyhood was spent in the country, in Kentucky, where sassafras abounds. I do not remember to have smelled the fragrance of sassafras trees, mentioned by these early authorities, unless the trees were broken or bruised. I have passed through great thickets of young and old trees and am sure that the statement that the fragrance is wafted far out to sea is overdrawn, as I observed no odor whatever, and am satisfied that sassafras exhales no aroma. When land in Kentucky is "worked poor" and turned out to rest it is likely to spring up in thickets of sassafras, persimmon, and black locust. I have heard old farmers, in speaking of a farm, say it was "too poor to raise sassafras," and no greater reflection could be cast on that land. No especial value is put on sassafras wood, it is not sought for fence posts nor is it used to drive away insects of any description.

As a remedy the bark is used in the spring to "thin the blood," being drunk as a tea. Indeed, I do not dislike it as a beverage, early impressions leading me now to take a package of fresh bark home with me occasionally for a family dish of sassafras tea. This is made exactly as coffee is prepared as a beverage, and is sweetened and used with cream in the same way. That sassafras tea was a very common *beverage* in my boyhood days may be shown by the following incident: I was traveling up the Ohio River on one of the palatial steamers of other

days, and the waiter asked a Kentuckian at my side who ordered tea, "what kind of tea" he wanted. "Store tea," he answered, "I kin git pleanty of sassafras at home."

It is not customary for sassafras drinkers to keep the root-bark separated from the root, the recently dug roots being shaved as the bark was used. Kentuckians claim that there are two varieties of sassafras, the red sassafras and the white, distinguished only by the bark. The white sassafras is not so aromatic and is bitter to the taste, and they use only the red bark.

In addition to the wood, root and bark, mucilage of the pith is employed in domestic medicine to bathe inflamed eyes. I find a complete description of the domestic uses of sassafras in Rafinesque's Medical Flora, 1830, which for various reasons I feel called upon to reproduce as an ending to this record of sassafras.

Found from Canada to Mexico and Brazil. Roots, bark, leaves, flowers, fragrant and spicy. Flavor and smell peculiar, similar to fennel, sweetish subacrid, residing in a volatile oil heavier than water. The *sassafrine*, a peculiar mucus unalterable by alcohol, found chiefly in the twigs and pith, thickens water, very mild and lubricating, very useful in opthalmia, dysentery, gravel, catarrh, etc. Wood yellow, hard, durable, soon loses the smell; the roots chiefly exported for use as stimulant, antispasmodic, sudorific, and depurative; the oil now often substituted; both useful in rheumatism, cutaneous diseases, secondary syphilis, typhus fevers, etc. Once used in dropsy. The Indians use a strong decoction to purge and clean the body in the spring; we use instead the tea of the blossoms for a vernal purification of the blood. The powder of the leaves used to make glutinous gombos. Leaves and buds used to flavor some beers and spirits. Also deemed vulnerary and resolvent chewed and applied, or menagogue and corroborant for women in tea; useful in scurvy, cachexy, flatulence, etc. Bowls and cups made of the wood, when fresh, it drives bugs and moths. The bark dyes wood of a fine orange color called *"shikih"* by Missouri tribes, and smoked like tobacco.

SCAMMONIUM

The dried juice of scammony **(Convolvulus scammonia)** has been used in domestic medicine from ancient times. Theophrastus (633), 300 B. C., mentions it, as well as did Dioscorides (194), Pliny (514), Celsus (136), and Rufus of Ephesus (561a), a city in whose neighborhood scammony abounded, as is yet the case near its ruins. The early Arabians were acquainted with the plant, and in the tenth and eleventh centuries it was used in Britain, being commended to Alfred the Great by Helias, Patriarch of Jerusalem. Botanists of the sixteenth and seventeenth centuries, as Brunfels (107), Gesner (264), and others, described the plant as well as the drug obtained therefrom, the latter being well described by Russell (566), an English physician of Aleppo, in 1752.

Scammony is obtained from Asia Minor, near Smyrna, which is its principal port of export. The resin of scammony, in the form of a dried juice, was gathered by means of sea shells, within which the juice collected and dried, a method of obtaining it still practiced in Asia Minor. Mr. Clark, of Sochia, near Smyrna, obtained the resin as an alcoholic extract from the dried root, a method of production

now in use, but which probably yields a product different from the natural gum (see Manna). Scammony is a gift of the Orient, the beginning of its use being home medication.

SCILLA

This bulbous plant (**Urginea maritima**) is broadly distributed in the islands of the Mediterranean and the countries neighboring, in the south of Spain and Portugal, and in many instances is found far inland, even to an elevation as high as three thousand feet above sea level. It is one of the most anciently recorded remedies, being mentioned by Epimenides (294), a Greek writer of the seventh century B. C., who made such use of it that it became known as *epimenidea*. Theophrastus (633) mentions it, Pliny (514) notes its two varieties, Dioscorides (194) describes the making of vinegar of squills, whilst preparations of squill with honey were familiar remedies in Arabian medication. The forms employed by the empiricists of those remote times seem not to have been improved upon by the pharmacy even of the present day; indeed, attempts to improve the aqueous or acetous squill simples of ancient home medication by alcoholic extracts and tinctures, have resulted in failure.

SCOPARIUS

This woody shrub, **Cytisus scoparius,** or *common broom,* prevails throughout Great Britain and Western and temperate Northern Europe, but it seems not to climb to any great height on the mountains of the Alps. According to Ledebour (375) it is native to the eastern side of the Ural Mountains. Scoparius is mentioned in the earliest Italian and German herbals under the name *genesta,* and under the name *broom* it was used in Anglo-Saxon medicine as well as in the Welsh "Meddygon Myddfai" (507). (See Note, page 1.) The London Pharmacopeia, 1618, gave it a place, and Gerarde (262) states that Henry VIII used it as a remedy "against surfets and diseases thereof arising." Broom also enjoyed a reputation in other directions, for example, being the emblem of "The Handsome" Geoffrey, or "Plantagenet," Count of Anjou, ancestor of the Plantagenet kings of England, who wore the common broom of his country, the "planta genista," in his helmet. Scoparius in the Pharmacopeia of the United States seems, like other established foreign drugs, to have heired its reputation and obtained its position from past records in mediæval European or Oriental times, instead of from any marked use it has enjoyed in American medicine.

SCOPOLA

The root of this plant, **Scopola carniolica,** is now official and may be substituted for belladonna in the making of the mydriatic alkaloids. Although of recent introduction in scientific pharmacy, it has an interesting botanical record, reaching back to Matthioli (414), who named it *Solanum somniferum alterum.*

This historical record of the plant is made complete by that unexcelled authority, E. M. Holmes, of London, his paper being published in full in the *Pharmaceutical Journal and Transactions*, London, December 14, 1889, pp. 468-471. The name by which it is now recognized was given to the plant by Jacquin (388a) in honor of Dr. Johann Anton Scopoli, professor of botany in the University of Pavia, who (1760) published his discovery of the plant under the name *Atropa caule herbaceo.* (See Lloyd Brothers' Drug Treatise No. X for biographical sketch.) Many are the names since affixed to it, regarding which Mr. Holmes remarks as follows: "Jacquin's name has unfortunately been several times altered by succeeding botanists."

The historical treatise of Holmes was briefly condensed as follows by Professor Maisch:

"The Natural History of Scopola carniolica (Jacquin)" gives a complete history of the synonymy of this plant, commencing with Matthioli, who in 1563 named it *Solanum somniferum alterum.* It was further described in 1622 by Caspar Bauhin under the name of *Solanum somniferum bacciferum;* in 1651 by J. Bauhin as *Solanum manicum,* "quod secundo loco proponuimus;" in 1760 by J. A. Scopoli, Professor of Botany at Pavia, as *Atropa caule herbaceo foliis ovatis, integris, fructu capsulari;* in 1764 by Jacquin as *Scopola carniolica;* in 1767 by Linnæus as *Hyoscyamus Scopolia;* in 1794 by Moench as *Scopola trichotoma;* in the same year by Schultes as *Scopolina atropoides;* in 1821 by Link as *Scopolia atropoides;* and in 1837 by G. Don as *Scopolia carniolica.*

The generic name Scopolia had been applied in 1763 by Adanson for what is now *Ricotia, Lin., Cruciferæ;* in 1776 by Forster for what is now *Griselinia, Forst., Cornaceæ;* in 1781 by Linnæus fil., for what is now *Daphne, Lin., Thymelaceæ;* in 1790 by Smith for what is now *Toddalia, Juss., Rutaceæ.*

Jacquin's name for the plant being the first binomial one published after the date of the first edition of Linnæus' *Species Plantarum* in 1753, should supersede the later names given by others. This author repeatedly writes "Scopola" (*not* Scopolia) in his published work.

This plant, possessing so much energy, was naturally known to the early herbalists, but was most cautiously employed by them. Wier (1515-1588) mentioned it (Maisch), but it was then forgotten until Dr. Lippich, of Padua (1834-7), used it instead of belladonna. The record shows that (410a) in Southern Europe (Martius, 1832) the leaves were used in the same way as belladonna. Kosteletzky (1832) states (361a) that it has the narcotic qualities of hyoscyamus. Neither in domestic nor in professional medicine had scopolia any reputation worth mentioning until after 1880, when its alkaloidal record and its many complications as a sophisticant for belladonna made such an event in pharmacy and chemistry as to give the plant a position in the U. S. Pharmacopeia of 1900.

SCUTELLARIA

Scutellaria lateriflora (skullcap) was in use as a domestic remedy before the publication of the first American materia medica, as shown by Schöpf (582), 1785. It was afterward conspicuous in the practice of a local physician, Dr. Lawrence Van Derveer, of New Jersey, who discovered the qualities that he believed it carried. At least he made no mention of any previous therapeutic record (388d). Dr. Van Der-

veer's use of scutellaria as a remedy in the cure of rabies gave him great notoriety and introduced the drug to Thacher (631), whose dissertation on "Hydrophobia and Its Cure" involved the remedies employed in that disease, as well as substances other than scutellaria commended therein. Scutellaria has thus a record both as a secret cure and as a professional remedy in the treatment of this dreadful disease, the latter, however, being altogether based upon the domestic use of the drug. According to Schöpf (582), 1785, the plant was used as a home remedy in the cure of fevers.

SENEGA

Senega, the root of a small North American plant (**Polygala senega**), enjoyed very early a reputation as one of the new remedies produced by America. The Seneca Indians of New York State employed it as a remedy for the bite of the rattlesnake, which led to its notoriety in the hands of Tennent, a Scotch physician in Virginia, who also administered it for coughs. Under the name senega, or rattlesnake root, it came to the attention of Dr. Mead, of London, and through his efforts and those of others (even Linnæus [385] writing a dissertation on it) senega root came into great demand. In domestic American medicine it has been continually used as an expectorant, the usual form being that of a syrup.

SENNA

Senna leaves are from two species of cassia, one of which is native to Nubia and other sections of Africa, while the other abounds in Yemen and Southern Arabia as well as in some parts of India, where it is cultivated for medicinal use. The cultivated plant, originally the product of Arabian seed, furnishes the leaves known in commerce as *Tinnevelly senna*. The drug was introduced into Western Europe by the Arabians, and in this connection it may be stated that, notwithstanding its present abundance in some parts of Africa, according to Isaac Judæus (336a), a native of Egypt, who lived about 850-900 A. D., senna was brought from Mecca to Egypt. In early Arabian medicine the pods of the senna were preferred to the leaves. Its price in France, 1542, was about that of pepper or ginger. This writer found senna in the Orient, carried in shops selling foods and provisions, as well as in the Oriental bazaars, it being everywhere a familiar domestic cathartic. Its native use introduced the drug to medicine and antedates historical record.

SERPENTARIA

Aristolochia serpentaria is a perennial herb found in woodlands of the temperate parts of the United States, especially in the Allegheny and Cumberland Mountains, although it seldom prevails abundantly. It is by some believed to have been first mentioned in 1636, by Thomas Johnson, an apothecary of London, who issued an edition of

Gerarde's (262) Herbal, and it is commonly believed that this was its introduction to England. Others, however, question whether the "snakeweed" mentioned in this work was not a species of aristolochia, from Crete. The early use of serpentaria in America was as a remedy for snakebite, which gave it the name *Virginia snakeroot,* but in this direction it has not, to our knowledge, been used in recent times anywhere in America. The domestic use of this drug has been in the direction of a stimulant to the organs of digestion, and in the form of a tincture as a stomachic, it being one of the ingredients of the old-time popular stomach bitters of American home medication.

SINAPIS ALBA

White mustard **(Sinapis alba)** seems to be indigenous to the southern countries of Europe and Western Asia, from which, according to Chinese authors, it was introduced into China. Formerly it was not distinguished from black mustard. Its cultivation in England is quite recent, but it is now an abundant weed in many sections. White mustard, in common with black mustard, is an exceedingly popular, stimulating condiment, and is preferred, on account of its color as well as its mildness, to the black mustard. The "mustard seed" of the Bible is the product of a tree (Salvadora persica), and is not the same as the plant now known under that name. (J. H. Balfour, Plants of the Bible.)

SINAPIS NIGRA

Black mustard **(Sinapis nigra)** is an herb found over the whole of Europe, excepting the extreme north. It also abounds in Northern Africa, Asia Minor, the Caucasian region, Western India, Southern Siberia, and China, as well as in North and South America, where it is now naturalized. It was known to the ancients, Theophrastus (633), Dioscorides (194), Pliny (514), and others noticing the plant. In early times it seems to have been used more as a medicine than as a condiment; but 300 B. C., Diocletian speaks of it as a substance used as a condiment in the eastern part of the Roman Empire. During the Middle Ages, Europeans esteemed it as an accompaniment to salted meats. The Welsh "Meddygon Myddfai" (see Note, page 1) (507), of the thirteenth century, commends the "Virtues of Mustard." Household recipes of the thirteenth and fourteenth centuries constantly mention mustard under the name *senapium.* The convent lands of France produced it as a part of their revenues, A. D. 800. Black mustard is naturally of great importance, the credit of its introduction being, as with other substances of a similar nature, due to the observing "empiricists." The Bible reference (see Sinapis alba) applies alike to Sinapis nigra.

SPIGELIA

Spigelia marilandica is an American plant, indigenous to the temperate regions and thick woods of this country. The Indians employed a decoction of the root as a vermifuge, thus introducing it at

an early date to the settlers, the physicians, and the botanists. It was described by Barton (43), Schöpf (582), and other authorities, but was never extensively used by the American schools of medicine, either the Botanic or the Eclectic. As a domestic remedy it was customary, half a century ago, to use a mixture of pink root and senna, to which were added a few pieces of manna, a home decoction being given to children and others afflicted with worms. In our opinion this home treatment consumed most of the drug of commerce, which, since the discovery of santonica, has come to be of minor importance. In the days of this writer's experience as a prescription clerk in Cincinnati (1865-1880) the mixture was in continual domestic demand as "pink and senna."

STAPHISAGRIA

Delphinium staphisagria, a native of waste places of Italy, the Greek islands, and Asia Minor, is now generally distributed throughout the Mediterranean countries and the adjacent islands, e. g., the Canaries. It was known to the ancients, being mentioned by Nicander (581), Dioscorides (194), Pliny (514), and others, the last-named author stating that the powdered seeds were used for destroying vermin of the head and body, in which direction it is still popular. Throughout the Middle Ages the drug continued in use, according to Pietro Crescenzio (172), of the thirteenth century. The seeds were collected in Italy, where the plant is still cultivated, being still in demand in domestic medicine as an insecticide.

STILLINGIA

Stillingia sylvatica is native to the pine barrens of the Southern States of North America, and in the form of an infusion or decoction of the green drug has been used in domestic medicine as a purgative and alterative, creeping thence to the attention of physicians of the Southern States. It was also employed empirically in cutaneous diseases, and as a constituent of various "blood purifiers" used commonly by the people of the South. A once popular remedy, *Wayne's Panacea,* was asserted by Rafinesque (535) to depend for its qualities upon stillingia, which Dr. John King (356-357) in his American Dispensatory most positively controverted. Inasmuch as Peter Smith (605), the "Indian Herb Doctor," neglects stillingia in his Dispensatory, while Rafinesque (535) gives it brief mention in his Medical Equivalents, it is evident that the drug came to the general attention of the medical profession by reason of the use made of it by the settlers, about the date of the first edition of King's American Dispensatory, 1852. Since that period until the early 60's it was a conspicuous constituent of the popular American "blood purifiers," and in the form of compound syrup of stillingia was used alike in empirical medication and by the profession.

STRAMONIUM

Datura stramonium is now found throughout most parts of the temperate civilized world. It was found in America, where the settlers near Jamestown, Virginia, used it as a pot herb, the resulting deaths so advertising it as to create the common name, still in use, *Jamestown* or *Jimson weed*. De Candolle (186) decided that stramonium was indigenous to the Old World, probably bordering the Caspian Sea, but not of India nor yet of Europe at the time of the classical period. The herb has been a pain-relieving favorite in domestic American medicine, in the form of a poultice or ointment made from the pulp of the bruised green leaves, to ease the pains of bites and stings of insects. The dried leaf is also smoked, for the relief of asthma. The domestic use of stramonium in these directions led the early American physician to its employment both internally and externally. (See Hyoscyamus.)

STROPHANTHUS

The genus **Strophanthus,** which produces this drug, is chiefly African, belonging to the apocynaceæ and the tribe echitideæ of this order, distinguished from the other tribes of the order chiefly from having the anthers united after the manner of the asclepiadaceæ. Index Kewensis mentions seventeen species, Bentham and Hooker eighteen species, Pax (495) twenty-five species, and the genus is being rapidly augmented as the flora of Africa becomes better known. Plants of the genus have usually woody stems, emitting a milky juice when wounded, and are generally twining vines. The seed of commerce is probably collected from various species indiscriminately, which have been classified and differentiated by Pax (495), Planchon (512), Hartwich (304), Holmes (322), Blondel (80), and others. Space will permit us to mention only the two species which are acknowledged to be the principal source of the drug.

Strophanthus hispidus, D. C., was one of four species described by De Candolle as early as 1802, and is the species to which the drug was first ascribed. Its habitat is Senegambia and Guinea and other parts of Western Africa. The stem is a twining, milky shrub, with opposite hirsute leaves. (Hence the name *hispidus,* Latin for bristly, hairy.) The seed, which bears a slender style terminating in a plumose pappus consisting of long hairs,* is the part used in medicine.

As stated before, the genus strophanthus was established by De Candolle as far back as the year 1802. It was not until the early sixties, however, that the drug came to the general notice of Europeans as being one of the arrow poisons used among the African native tribes, there being two kinds of arrow poisons derived from this source. A poison was prepared on the west coast of Africa (Senegambia, Guinea, and Gaboon) called *inee* or *onaye,* which is derived

* Hartwich calls special attention to the fact that the hairs of strophanthus seed are very sensitive to moisture, spreading horizontally in dry air, and becoming erect in moist atmosphere. He suggests that the pappus would thus make an hygrometer sufficiently sensitive for practical purposes.

from Strophanthus hispidus, D. C. This is on the authority of Hendelot, who observed the plant yielding this poison in Senegambia at the River Nunez (246). A specimen of this arrow poison was sent to Europe and investigated by Pelikan in 1865. (Comptes Rendus, 1865, vol. 60, p. 1209.)

On the east coast of Africa the *kombe* or *gombe* poison was in use in the Manganjah tribe, located near Lake Nyassa on the banks of the River Shire, a tributary of the Zambesi River. Consul Kirk in Zanzibar, in 1861, established that this poison originated from a strophanthus species, and forwarded specimens to Professor Sharpey in England for the purpose of investigation (246). Subsequently, in 1865, Livingstone's famous reports brought the kombe poison to a more general notice among the Europeans (387).

This species of strophanthus was at first considered identical with S. hispidus, D. C., but the plant was shown by Oliver in 1885 to be distinct from the latter, and justified the establishing of a new species, Strophanthus kombe.

The physiological features of the drug as a powerful cardiac were recognized by the first investigators (Sharpey, 1862; Pelikan, 1865; Fraser, 1871). Livingstone reports the observation of Consul Kirk that the poison remarkably reduced the pulse, but the drug was not authoritatively recognized by the medical profession until about the year 1885. In this connection it is interesting to note that in Somaliland, Africa, the native, in order to establish the virulence of the poison, scrapes the skin from his own arm until the blood flows, when he applies the poison to the lower end of the bloody pool and watches the coagulating effect, from below upward. To the firm of Burroughs, Wellcome & Co., London (677-678), is largely due the position that Strophanthus occupies in the medical lore of the present day, this being due chiefly to the efforts of Mr. Henry S. Wellcome, through his friend, Henry M. Stanley, the African explorer.

STYRAX

Styrax is the product of a tree native to the southwestern part of Asia Minor and the adjacent islands. According to Krinos, of Athens, 1862, the earliest allusions to styrax were made by Aëtius (6) and Paulus Ægineta (494), 1567. The early Arabian physicians were acquainted with styrax and its methods of production. The Russian Abbott of Tver, 1113-15, describes the tree as found by him in his travels through Asia Minor. Styrax reached China as early at least as 1368 by means of Arabian caravans, but it is now shipped to China by way of the Red Sea and India. Its use in medicine is restricted mainly to an external application in skin diseases, combined with other substances. It has, however, been recommended for internal use. and in former times it was a constituent of empirical compounds designed for internal medication. (Not official in the eighth revision U. S. P.)

SUMBUL

Musk root, **Ferula sumbul,** was first introduced into Russia as a substitute for musk, and was known in Germany in 1840 as a Russian product. Its history is to the effect that in 1869 a Russian traveler, Fedschenko (240), discovered the plant producing it in the northern part of the Khanat of Bukhara, 40° N. Lat. Sumbul has no authentic position in so-called "scientific" medicine other than that it crept into the British Pharmacopeia in 1867 as a substance that had been recommended as a substitute for musk in cholera.

TAMARINDUS

The tamarind **(Tamarindus indica)** is a handsome tree indigenous to tropical Africa. It is also found throughout India, Java, and Yemen, and has been naturalized in South America as well as in adjacent tropical islands, such as the West Indies; also in Mexico, we having gathered it in La Paz, Lower California. The ancient Greeks and Romans seem not to have known the tamarind. If known to the Egyptians, it was neglected by their authors, although Sir Gardner Wilkinson (688) states that tamarind stones were found in the tombs of Thebes, a statement not confirmed, however, by specimens of the contents of tombs in the British Museum. The ancient Sanskrit writings mention tamarind, and the fruit was known to the Arabians as *Indian dates,* under which name it was mentioned by early authors, such as Avicenna (30) and others, including Alhervi (2), of Persia. Credit is given the Arabians for the distribution of the drug and its uses, it passing from them, with other Eastern products, into Europe through the famous school of Salernum. Tamarinds have been used in their native countries in the making of a cooling drink much relished by persons afflicted with fevers, in which direction they have been also employed in medicine throughout the civilized world. It would be better if the modern physician were more familiar with the grateful home-made drink that tamarinds afford the parched sufferer from fever.

TARAXACUM

The dandelion **(Taraxacum officinale)** is a plant familiar to all, being found throughout the whole of Europe, Central Asia, and North America, even to the Arctic regions. Although the word *taraxacum* is usually considered to be of Greek origin, there is no authentic record that the plant was known to the classical writers of Greece and Rome. The herbal, 1488, of Johann von Cube (173) gives it a position under the name *Dens leonis.* It is mentioned by Rhazes in the tenth and by Avicenna (30) in the eleventh centuries, and it was used in Welsh medicine in the thirteenth century. In domestic mediæval medication and as an ingredient of many popular American "bitters" and "blood purifiers" taraxacum was employed extensively. It yet enjoys a high reputation as a home remedy.

TEREBINTHINA RESINA

Turpentine. Oil of Turpentine. Resin.

The sticky juice of many trees, as the pine, the larch, and other coniferous trees, is known by the general name, *turpentine,* qualified by an adjective descriptive of its botanical origin or the country producing it; for example, Strasburg turpentine, Canada balsam, etc. This resinous, balsamic exudation has been used from all times as a balsam or pitch, or, when the wood of the tree is subjected to the action of heat, as a product of decomposition known as tar. This writer (1906) observed a fragrant oleaginous tar brought into Smyrna in sheepskins from the interior of Asia Minor, which enjoyed a domestic popularity in that part of the country. The Indians of North America employed Canada balsam as an application to wounds, it being an excellent antiseptic dressing for such purposes (see Indian Captivities, Guiie's Narrative (198). The distillate of the natural turpentine, had once a widely known domestic use in America as a remedy for worms, whilst the resin (rosin), which remains after the distillation of the spirit, is much employed in domestic treatment of the horse. All these forms of turpentine, as well as the empyrheumatic products of many related trees, have been known to the common people, as a rule, from the earliest records of history. The last issue of the Pharmacopeia of the United States, under the title *Oleum Terebinthinæ Rectificatum,* directs that the spirit obtained from the distillation of turpentine, usually obtained from the *Pinus australis,* be purified by redistillation from a solution of sodium hydrate.

THYMOL

Thymol is a product of **Thymus vulgaris,** a native of Portugal. Spain, Southern France, Italy, and the mountainous parts of Greece. It has for several centuries been cultivated in England as a garden plant, and has long been known to yield a highly aromatic essential oil. Under the name *camphor of thyme,* an apothecary at the court of Berlin named Neumann, 1725, described this substance, which was called *thymol* by Lallemand (369a) in 1853, thus giving a name to a substance that, in little use in itself, had ever been valued in domestic medicine as well as by the medical profession in its natural association and combination as a part of oil of thyme. Under the name *oil of origanum,* oil of thyme has been a popular product obtained by the distillation of this herb, being used as an ingredient in domestic liniments and in veterinary medicine. Its use by the medical profession is even yet much limited.

TRAGACANTHA

This gummy exudation (**gum tragacanth**) is a gift of Asia Minor, the shrub yielding it being very widely distributed. To locate exactly its first use would be to antedate historic records. It has ever been before the people in the cradle of humanity, where as a natural product

it has always been employed. Theophrastus (633) three centuries before Christ, described it and located its origin. Dioscorides, a Greek writer, and Arabian writers gave it due attention. In fact, it would perhaps be as difficult to locate the first use of wheat as the first use of Tragacanth.

However, until a moderately recent period, only the knotty yellow or brown natural exudation was found in commerce. The natives learned next that by cleaning the bases of the bushes, incising the bark with a knife, ribbons of a pure white or semi-transparent nature could be produced. This is now the favorite form.

Tragacanth comes into Smyrna from the interior of Asia Minor, and from Persia and Armenia. Professor T. H. Norton described to us its collection about Harput, Turkey. Tragacanth of commerce is a conglomerate mixture, good, bad, indifferent, as obtained from the caravans. In Smyrna it is sorted into grades, based mainly on the color. This writer took much interest in the Tragacanth problem, and made many photographs of the Smyrna warehouses, where girls (Jewish) were engaged in sorting Tragacanth and nugtalls. Dealers in the one handle the other.

TRITICUM

Couch grass, **Agropyron repens,** is a weed widely diffused throughout Europe, Northern Asia, the Caspian region, North and South America, even to Patagonia and Terra del Fuega. The ancients were naturally familiar with this grass with a creeping root-stalk, but it is impossible to determine the species valued by them. Dioscorides (194) ascribes to the decoction a value in calculus and suppression of urine. This use of triticum is corroborated by Pliny (514), and again occurs in the writings of Oribasius (479a) of the third century. Practically all the mediæval herbals figure the plant as in Dodonæus (195). As a domestic remedy triticum has ever been in common use, and is still, in the form of a decoction, much employed in mucous discharges from the bladder and in other affections of the urinary organs.

ULMUS

"Slippery elm," **Ulmus fulva,** is a middle-sized tree found abundantly in the natural woodlands of the Central and Eastern United States, from Canada to the South. The Indians and settlers of North America valued the inner bark of this tree as a poultice; in certain skin diseases they used it as an external application, and as a soothing drink in fevers. In bowel affections they employed a cold decoction. Schöpf (582), 1787, refers to it as "salve bark." An infusion made by digesting the shredded inner bark of slippery elm in cold water, has (after the teaching of the Indians) ever maintained a high reputation in domestic North American medication in fevers, and especially in diarrheas connected therewith. The mucilaginous qualities render the powdered bark peculiarly adapted to the making of poultices, in which direction it was known to all the early settlers of America and was by them introduced to the medical profession.

UVA URSI

Bearberry, *Uva ursi* (**Arctostaphylos uva ursi**) (Linné), which takes its name from the fact that its berries are eaten by bears and other animals, is a low evergreen shrub common to the Northern countries of Europe and America. The leaves, which are used in medicine, are an article of commerce in the northern sections of Europe, America, and some parts of Asia. Being used in tanning, in Sweden and Russia, according to Rafinesque (535), they established the well-known Russia leather. The astringent leaves were once highly valued in Europe, but have since fallen into disuse. The domestic employment of the drug introduced it to American medicine, Drs. Wistar, Barton (43), and Bigelow (69) recommending a decoction of it as a wash for leucorrhea and as an injection in gonorrhea and catarrh of the bladder. For these purposes, as based on its domestic employment, the plant has its professional record, but has never been very important in any school of medicine.

VALERIANA

The herbaceous perennial **Valeriana officinalis** is found throughout Europe from Spain to Iceland, extending also from the Crimæa. over Northern Asia, into China. It not only grows wild, but in England especially is cultivated as a drug plant. It was known to the Greeks and Romans, and the *wild nard* described by Dioscorides (194) and Pliny (514) is supposed to be a species of valerian, of which, in addition to the *Valeriana officinalis*, nine species are found in Asia Minor. The name *valerian,* however, was not used by the classical writers, occurring first in the ninth and tenth centuries. It is found in the Anglo-Saxon names of home remedies, and in domestic books as early as the eleventh century. Saladinus (570) of Ascoli, 1450, directed that the root be collected in the month of August. In mediæval days in England the flavor of valerian was considered by the common people a delightful addition to broths and pottages, Gerarde (262) in his *Herball,* 1567, remarking that the poorer classes of people in the north of England did not consider such forms of food worth anything without it. Strangely enough also the odor of valerian, now considered exceedingly disagreeable, was in the sixteenth century accepted as a perfume, and as a perfume it is still used in the Orient. In this connection we will add that we have known valerian to be a constituent of a perfume very popular with some ladies, but exceedingly unpleasant to some other people. In domestic medicine a tea from the root of valerian has been employed as a stimulant and antispasmodic in nervous diseases peculiar to females.

VANILLA

The conquering Spaniards found vanilla in use as a flavor for cacao among the Aztecs of Mexico, and naturally made this plant known to Europe. It was then described and illustrated by Hernandez (314), the "Pliny of the Spaniards," in his history of Mexico, who de-

scribed it under both the botanical name, "aracus aromaticus," and its vernacular name, "tlilxochitl." Clusius (153) mentions it in 1602 as "lobus oblongus aromaticus." Pomet (519), in 1694, reports the use of vanilla in France to flavor chocolate and sometimes to perfume snuff. As early as 1721 vanilla was introduced into the London pharmacopeia, and in 1739 Mr. Ph. Miller (437) planted some vanilla specimens (*vanilla aromatica,* Swartz) in the Chelsea botanical garden. In the West Indies and the adjoining coast of South America vanilla has also long been known.

In 1724 P. Labat (365), a Catholic missionary, reports (from hear-say) the abundant occurrence of vanilla in the "terre ferme" of Cayenne, from which place specimens were forwarded to him in 1697 to Martinique, where he cultivated the plant and observed its habits for eight years. He also planted vanilla in Guadaloupe. In 1750 P. Gumilla met vanilla in the Orinoco country. To Humboldt (331) we owe the first authentic and detailed report on Mexican vanilla. The Mexican Province of Oaxaca supplied the first vanilla export to Spain, and the bean was discovered in this province by De Menonville (Gardeners' Chronicle, May, 1874) in 1777. Vanilla forests, according to old archives, have been in cultivation at Papantla, near Vera Cruz, as early as 1760.

The species yielding the finest-flavored vanilla, subsequently named *vanilla planifolia*, Andrews, was imported from America into England by the Rt. Hon. Charles Greville (Hortus Kewensis, Vol. v, 1813), this flowering in his collection at Paddington in 1807 (57). Specimens of this plant were later transferred to Paris and Belgium, from whence the botanical gardens of Reunion (Bourbon) and Java were supplied. In 1830 Neumann introduced the artificial fecundation of Vanilla planifolia in the Jardin des Plantes at Paris, and in 1837 Professor Morren did the same at Liege (239). The Java plantation, started in 1841, now supplies the Dutch market solely.

The Reunion plantation, according to Delteuil, was started by Perrottet in 1839 (239). The cultivation of vanilla for the purpose of export was subsequently introduced into other French colonies—e. g., into Mauritius by M. Richard (550), into Guadaloupe (in 1875), Martinique, Ste. Marie (near Madagascar), and into Tahiti of the Society Islands. In Jamaica individual attempts to cultivate vanilla are on record. The cultivation in Calcutta, however, according to reports by Dr. King, seems to be a failure. (Phar. Journ. & Trans., Nov., 1876.) Suggestions have been made of a more energetic prosecution of the vanilla culture in Jamaica, in Venezuela, and Guiana; also of an introduction of this article into the extreme southern parts of the United States, Florida, and Texas. For a historical treatise on all the aspects of vanilla and its cultivation see (388) Vanilla planifolia.

VERATRUM VIRIDE

This is quite a common plant in many parts of the United States, particularly in the eastern states, where it grows in swampy places, wet meadows, and along the borders of streams. It is usually well known

to the people in sections where it is found, who call it itch-weed, Indian poke, poke-root,* or American hellebore, swamp hellebore, etc. The earliest travelers made mention of it. Josselyn (345) records that it was used as an ordeal test by the American Indians, somewhat on the same order as the ordeals by the negroes of Africa at the present day. He supposed it was the same as Veratrum album of Europe, and notes its abundance, stating "that you may in a small compass gather whole cart-loads of it."

Peter Kalm (350) states that it is very common in marshy places and frequently causes the death of stock which eat the young leaves in spring; also that the settlers employed a decoction of the root to poison the seed-corn, to prevent the birds from eating it;† and also that the root was used as an insecticide.

According to Loudon the plant was introduced into Europe in 1742, though most authorities ascribe to Peter Collinson its introduction in 1763 (8). It was named and described in the first edition of Aiton's Hortus Kewensis (vol. 3, p. 422, 1789) as Veratrum viride, and Aiton by most writers is given as the author of the name. In justice, however, the credit should be given to William Solander, an English botanist and illustrious pupil of Linnæus, who (although no mention of the fact is made in the publication) furnished the descriptions and nomenclature of the new species described in Aiton's work.‡

Veratrum viride is conceded by all modern botanists to be a distinct species; it is so close, however, to Veratrum album of Europe that the early explorers of America and some of the earlier botanists and travelers—Michaux (433) (Flor. bor. am., Vol. II, p. 249), Josselyn (345), Kalm (350), David Schöpf (582)—thought it was the same species. Certainly the rhizomes of both plants bear a close resemblance to each other, even in their microscopical aspects. (E. S. Baslin, Am. Jour. Phar., 1895, p. 196.)

VIBURNUM OPULUS

High cranberry, **Viburnum opulus,** known also as *cramp bark,* is a shrub growing in swamps and damp localities of the Northern United States. The bark of this shrub was used by the Indians as a diuretic, a decoction being freely employed. According to Rafinesque (535), pills and plasters were also devised from this plant, and the bark was smoked, instead of tobacco, by some of the Western Indian tribes. The leaves of Viburnum opulus and other species were used by the Indians as a tea, and also by the settlers of the Southern States in early Colonial days. The domestic use of viburnum did not impress the medical profession to any extent until the day of Beach (49), as is evidenced by the fact that such conspicuous authorities as Zollickoffer (706), and even the United States Dispensatory, 1833 edition, neglected to mention either the plant or its uses.

* A name universally employed for phytolacca decandra.

† The statement being that the marauding birds were sickened and did not return.

‡ Dictionary of National Biography. "Aiton, Wm." New York, 1885 to date.

VIBURNUM PRUNIFOLIUM

Black haw, **Viburnum prunifolium.** The bark of this tree was employed in American domestic medication during the first part of the nineteenth century. The first authentic reference we have observed is in the *American Family Physician,* by Professor John King, M. D. (356), 1857, where the drug is described and the statement made that it acts as a uterine tonic, its uses being practically those now recorded in medical literature. In 1860 Dr. I. J. M. Goss *(New Preparations,* 1878, p. 61) commended the drug, probably brought to his attention through the writings of King, as well, possibly, as from its local employment in his part of the South. He introduced it into his own practice and commended it to his professional friends. From this date black haw grew rapidly in favor, and through repeated publications, in medical as well as pharmaceutical literature, came into extensive demand, being finally given a position in the Pharmacopeia of the United States.

XANTHOXYLUM

Prickly ash, **Xanthoxylum americanum,** is a shrub native to North America, being somewhat abundant in localities where it is found, between the Mississippi River and the Western States. Long a domestic remedy, it became a favorite in the Eclectic school of medicine by reason of its use during the prevalence of the Asiatic cholera in Cincinnati, 1849, in which it was employed by them with great satisfaction. It had, however, as stated, a domestic as well as a seemingly professional record preceding that date, the same reaching back to the primitive medication of the Indians. Barton's Collection (43), Zollickoffer's (706) Materia Medica (1826), and other authorities on the domestic remedies of North America mention it conspicuously, the latter writer stating that the berries were used to relieve the toothache, a decoction of the bark in the treatment of rheumatic affections, whilst the country people employed an infusion of the berries in colic. It was therefore a popular remedy, possessed of marked carminative qualities, that, impressing such men as Barton (43), Thacher (631), King 356-357), Zollickoffer (706), and others, brought it into professional recognition. Prickly ash berries are used in large amount in some of the American proprietary remedies.

ZEA (STIGMA MAYDIS)

Corn Silk (**Zea,** or **Stigmata maydis)** seems to have crept into the notice of the medical profession in Europe before it had any conspicuity in America. In 1878 (*Revista de Madrid*), a Dr. Betherand mentioned it in print. Long preceding that date, however, a tea of corn silk had been employed in American domestic practice as a remedy for acute affections of the bladder. Dr. John Davis, a well-known Cincinnati physician, repeatedly informed the writer that, in his opinion, a decoction of corn silk, together with a decoction of dried pods of beans, was the most effective of all diuretics he had employed in his practice,

as well as being most satisfactory in acute cystitis. The *Medical News,* August 10, 1881, commended a decoction of corn silk in the aforenamed directions, and in the *Therapeutic Gazette* (634), February, 1881, Professor L. W. Benson reported that in his practice the remedy acted very favorably and kindly. Following this, various contributions appeared in the foreign medical journals, one by Dr. Dufau in the *London Medical Record*, spoke of it as a little known, newly introduced remedy. Many commendatory articles followed this in European medical journals, which fact, together with the increased demand on American manufacturing pharmacists, led to its introduction into the Pharmacopeia of the United States.

ZINGIBER

Ginger, **Zingiber officinale,** is a reed-like plant native to Asia, but has been introduced to most tropical countries, and grows freely in some parts of the West Indies, South America, Western Africa. Australia, etc. It was known to the ancients, being extensively used by the Greeks and Romans, who considered it an Arabian product because it came to them, among spices from India, by way of the Red Sea. It was an article of common import from the East to Europe from the eleventh to the thirteenth centuries A. D., and probably for a long period preceding that time. Ginger was taxed as a spice, in common with pepper, cloves, galangal, cubebs, etc. It was frequently named in the Anglo-Saxon domestic works on medicine of the eleventh century, and was used by the Welsh physicians (507) of the thirteenth and fourteenth centuries, being then next to pepper in common use. Marco Polo (518) observed it in China and India about 1280-90. In fact, ginger has been a spice and a domestic remedy from the earliest records, being extensively employed both as a spice and as an aromatic stomachic. It is still a popular domestic remedy as well as a favorite with many physicians.

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The text numbers in parenthesis refer to corresponding numbers in the Bibliography. Other numbers, as a rule, refer to dates.

The Bibliographical references embrace 763 authors and 919 titles. Many authors, however, to whom credit might properly be given in these pages, have been unmentioned. (See Introduction.) But, inasmuch as the majority of the publications herein referred to are now on the shelves of the Lloyd Library, as is true also of thousands of others of importance to which reference, for lack of space, has been omitted, the chain of events, past or present, concerning any subject, can be completed by taking advantage of the bibliographical references herein recorded. To Mr. Wm. Holden, Librarian Lloyd Library, is due the credit of the completeness of these references.

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